

# APPENDICES

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# APPENDIX 1

## City of Surrey Corporate Report – General Clayton Land Use Plan

# Corporate Report

NO: \_\_\_\_\_

COUNCIL DATE: \_\_\_\_\_

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## COUNCIL-IN-COMMITTEE

TO: Mayor & Council DATE: November 24, 1998  
FROM: General Manager, Planning & Development FILE: 2350-004  
SUBJECT: Clayton Neighbourhood Concept Plan  
General Land Use Concept

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## RECOMMENDATION

The Planning & Development Department recommends that City Council:

1. Approve the attached Clayton General Land Use Concept (Appendix I) as a basis for preparing a detailed Neighbourhood Concept Plan for East Clayton (lands currently designated URBAN in Surrey's Official Community Plan);
2. Instruct staff to commence the preparation of a detailed Neighbourhood Concept Plan for East Clayton to include the type, size, location and densities of the specific land uses, road hierarchy and alignments based on the General Land Use Concept;
3. Instruct staff to incorporate sustainable development principles, standards and practices into the detailed Neighbourhood Concept Plan;
4. Instruct staff to prepare a comprehensive servicing, phasing and financial strategy for East Clayton that will demonstrate adequate funding for specific amenities, infrastructure and utilities; and,
5. Instruct staff to address the outstanding issues, as identified in Appendix VI, during the East Clayton Neighbourhood Concept Plan process.

## INTENT

The intent of this report is:

- a) To provide City Council with an overview of the General Land Use Concept for Clayton, including a summary of the planning process and the major components of the plan;
- b) To recommend approval in principle of the proposed General Land Use Concept for Clayton to permit staff to proceed with preparing a detailed Neighbourhood Concept Plan for East Clayton; and,
- c) To provide City Council with a summary of the outstanding issues that need to be addressed in conjunction with the detailed Neighbourhood Concept Plan.

## BACKGROUND

### Study Area Characteristics

The Clayton study area comprises approximately 809 hectares (2,000 acres) and is bounded by the Agricultural-  
EAST CLAYTON NEIGHBOURHOOD CONCEPT PLAN, 2000

tural Land Reserve on the north (approximately 84 Avenue), the Fraser Highway to the south, the Agricultural Land Reserve to the west (approximately 180 Street) and 196 Street (Langley border) to the east. The map in Appendix III attached illustrates the extent of the Clayton Study area.

Clayton is an expansive and diverse planning area. It has a definite “edge” which is where the suburban lands meet the agricultural lands. Clayton is characterized by a rural ambiance and the area provides excellent views of the mountains and lowlands. The focus of the community is a major park, school site and community hall in the vicinity of 70/72 Avenue and 184/188 Street in the centre of Clayton.

An environmental study indicates that there are many significant watercourses and forest blocks worthy of protection. There is a strong rural and agricultural presence in Clayton, including several existing one-acre subdivisions. There is no organized commercial development apart from some commercial along Fraser Highway and a small convenience store at 80 Avenue and 192 Street.

### **Policy Framework - Surrey’s Official Community Plan**

Surrey’s Official Community Plan designates East Clayton as URBAN and the remainder of Clayton as SUBURBAN (see Appendix III). East Clayton is defined as the area east of 188 Street and south of 72 Avenue (nearest to Langley Township). The Urban Growth Concept contained in Surrey’s Official Community Plan identifies East Clayton as an urban infill area and the remaining suburban land within Clayton as an area with potential long term development subject to land use planning with local residents. Given that East Clayton will be developed in advance of the remainder of Clayton, it is prudent to establish an overall planning structure for the entire Clayton area before proceeding with detailed planning and development of the lands in East Clayton. Due to the existence of an abundance of vacant urban land in Surrey’s Neighbourhood Concept Plan areas, the area outside of East Clayton is considered to be a low priority for City servicing and development.

The Official Community Plan also provides guidelines and requirements for the preparation and content of Neighbourhood Concept Plans for Surrey’s emerging urban areas. The General Land Use Concept for Clayton was prepared within this Neighbourhood Concept Plan policy framework.

During the Suburban Lands Review Study (1992) it was suggested that some lands adjacent to the Fraser Highway in Clayton be designated for a “workplace”, in order to provide local employment opportunities. The planning process for Clayton also considered this recommendation.

### **Neighbourhood Concept Plan Process**

#### ***Overview of the Planning Process (Appendix IV)***

The table presented in Appendix IV outlines the planning process undertaken in preparing the General Land Use Concept for Clayton. The preparation of the General Land Use Concept (along with the servicing, phasing and drainage plans) is the first stage of planning after which will follow the preparation of more detailed Neighbourhood Concept Plans for the individual neighbourhoods of Clayton.

#### ***Clayton Citizen Advisory Committee (CAC)***

To bring local knowledge to the planning process and to facilitate local discussion and communication, a Citizen Advisory Committee was established to assist City staff in preparing the General Land Use Concept. The Committee consisted of 15 full members and 15 alternate members equitably representing the three geographical areas of Clayton (east, west and north). The Committee met on an ongoing basis throughout the planning process and served as an invaluable resource in reviewing the proposed land use concepts, disseminating information to their constituents and assisting with the selection of a preferred land use concept.

### ***Public Meetings & Open Houses***

The planning process was initiated in November, 1996 with a public workshop at which approximately 300 people gathered in groups to brainstorm on what the vision for the future Clayton community should be. This was followed by subsequent public information meetings in May, 1997, December, 1997 and May, 1998 at which the residents and property owners could make comments on the various land use concepts presented.

### ***Other Communications***

The Clayton Community Association (representing all of Clayton) was kept apprised of the progression of the planning process and disseminated information to the residents of Clayton through its Newsletter and monthly meetings.

Staff also kept an ad-hoc group of East Clayton property owners updated on the status of the planning process. This group evidently met once a month at meetings organized by predominant developers in the area.

### ***Input and Review by City Departments, Government Agencies & Langley Township***

The City's project team involved in preparing the General Land Use Concept for Clayton included staff from Planning & Development, Engineering, Parks, Recreation & Culture, the School District and engineering and environmental consultants. This team-oriented approach has resulted in the optimal Land Use Concept which addresses the public, municipal and technical objectives of all stakeholders. It is noted that other government agencies were consulted at the outset of the planning process and throughout the process as necessary. In addition, staff worked closely with staff from the Township of Langley to ensure that the land uses and transportation network proposed for Clayton and Willoughby (land use plan in process) are compatible and congruous.

## **DISCUSSION**

### **Planning Objectives for the Clayton Community (Appendix V)**

Planning objectives for Clayton were identified through discussions with the Citizen Advisory Committee, through consultation with internal and external stakeholders and through a public workshop at which the Clayton community articulated answers to the question "What would make Clayton a good community to live in?"

The planning objectives for Clayton resulting from this consultative process which provided direction for preparing the General Land Use Concept are presented in Appendix V.

### **Overview of the Plan**

#### ***Community Structure - Clayton as a Complete Community***

The projected population at full build out (subject to detailed planning for the future urban area) under the proposed General Land Use Concept is expected to be 30,000 - 35,000. Consistent with the desires of the community, the Clayton area has been planned as a complete community with a village centre as outlined below:

- Clayton will have its own identity and community focus by having school/park sites, the community hall, commercial and institutional uses integrated within a "village centre" located in the central area of Clayton.
- To provide local employment opportunities, a comprehensively designed workplace/employment centre will be located near the intersection of Fraser Highway and 192 Street.

- To provide an innovative alternative to standard homes and offices, and to accommodate fragmented land ownership, a live/work area is proposed for the smaller parcels of land located near 64 Avenue and 192 Street.
- The Clayton community will be self-contained in that the residents will be able to obtain everyday shopping items, and attend to their recreational and social needs within the boundaries of their neighbourhoods.
- For school catchment and planning purposes, Clayton will be delineated into eight neighbourhoods with the elementary school/park serving as a focus.
- There will be direct and easy accessibility to transit (Fraser Highway), and a grid road system combined with greenways will enable residents to walk or cycle to all of the main schools, parks, services and facilities.

### ***The Village Concept***

The future Clayton Village neighbourhood (see Appendix II for neighbourhood location) currently accommodates Clayton Hall, a large active park, natural open space and the new Clayton Secondary School in the vicinity of 72 Avenue and 188 Street. Building upon this established focal point, the General Land Use Concept provides for the added vibrancy of this village centre by including some local commercial, mixed use, institutional and additional open space and greenways. The village centre concept will be the main contributing factor in establishing Clayton as a unique community with its own identity. A detailed Neighbourhood Concept Plan for the Village Centre neighbourhood will commence when the Neighbourhood Concept Plan for East Clayton is complete.

### ***Residential***

A variety of housing types are proposed for Clayton including multiple residential, single family (RF) standard lots, small lots, suburban lots, commercial/residential and live/work housing. It is anticipated that there will be in the range of 10,000 - 15,00 dwelling units of varying types that would ultimately be developed over time under the General Land Use Concept.

Multiple residential (e.g. townhouses, apartments) will be located toward the Willowbrook area (where higher densities in Langley Township are proposed) and around the Village Centre (to reinforce it). Additional multiple residential development will be concentrated along the Fraser Highway in between 184 Street and 188 Street.

Low and transitional density single family urban lots of varying sizes will be developed in the east and central area of Clayton. Suburban lots will be developed toward the north and west adjacent to the Agricultural Land Reserve, to act as a density transition toward the agricultural lands.

The General Land Use Concept incorporates the notion of accommodating a “transitional density area” between the multiple residential and urban residential designations and adjacent to the Business Park. The intent of this designation is to allow for a density and form of housing that will ease the transition between single family lots, for example, and apartments or townhouses.

### ***Commercial***

The General Land Use Concept contemplates about 5.26 hectares (13 acres) of commercial and commercial/residential in the Village Centre, along with small local commercial sites at 80 Avenue and 192 Street, and at 72 Avenue and 196 Street. Consistent with adjacent land uses in Langley, a mixed commercial/residential development is proposed for the north west corner of 64 Avenue and 196 Street. Additional local commercial opportunities may arise from the detailed Neighbourhood Concept Plan process, given that one of the objectives of sustainable development and livability is to provide the opportunity for residents to do their convenience shopping in the neighbourhood.

### ***Business Park (Work Place)***

In order to provide employment opportunities and in keeping with the idea of a complete community concept, a business park is proposed for the area west of 192 Street near the Fraser Highway. This is intended to be a low impact business park which will accommodate research and development companies, corporate offices, high tech manufacturers and distributors.

A business park study recently commissioned by the City reveals that Surrey has a severe shortage of lands available for corporate business park development. The study further identifies Clayton as an ideal location for such a comprehensively designed business park.

### ***Live & Work Area***

Approximately 23 hectares (57 acres) have been designated for live/work development. While the precise nature of this type of development is largely undefined, the market appeal and affordability potential prompted the inclusion of this innovative housing type in the Clayton plan. It is noted that the details of density, form and design of this type of development will be refined during the detailed Neighbourhood Concept Plan process. The City has also applied for a grant to cover the costs of developing and implementing the live/work housing concept in Surrey.

If, during the Neighbourhood Concept Plan process, the live/work concept is determined not to be feasible, the General Land Use Concept contemplates the option of business park uses for these lands.

### ***Schools and Parks***

In consultation with the Surrey School District No. 36, eight future school catchment areas, based upon projected student populations, have been delineated in the Clayton area. The plan attached in Appendix II identifies these general catchment areas. The elementary school catchment areas also serve to delineate the boundaries of the future neighbourhoods in Clayton. Each school catchment area or neighbourhood will consist of approximately 4,000 - 6,000 people.

It is noted that there are currently two elementary schools in Clayton (in Clayton Village and Clayton West catchment areas) which are intended to stay open. Clayton Secondary School on 188 Street is currently under construction and is expected to open in September, 1999. When the entire Clayton area is developed another secondary school will be required north of 72 Avenue.

Each elementary school will be associated with a park site to provide active and passive recreational opportunities for the neighbourhood (each school/park site will about 5.26 hectares (13 acres) in size). Other park and open space areas will include the main central park in the Village Centre, various greenways, watercourse protection areas, environmentally sensitive areas and open space associated with storm water detention ponds.

The locations of school/park sites and open space will be defined during the detailed Neighbourhood Concept Plan process.

### ***Preservation Areas, Environmentally Sensitive Areas and Watercourses***

A Bio-Inventory Study of the Clayton area has revealed that there are several significant forest blocks and watercourses which should be protected as development occurs in the area (see the General Land Use Concept in Appendix I). The most significant forest block is located in the north area of Clayton in between 76 and 78 Avenue and 188 and 192 Street. The City owns several sites in the vicinity of this large forest block. Another significant forest block is located at the Langley border just north of 72 Avenue. In consultation with planning staff from Langley Township who are in the process of preparing a plan for Willoughby, it has been agreed that this forest block

should remain intact in the respective plans and that methods to preserve the forest be explored at the detailed planning stage.

There are a number of fish bearing watercourses which will be protected through the application of development setbacks. City staff will be examining alternative methods (e.g. gross density zoning, density bonusing, cluster zoning, alternative design standards, etc.) during the detailed Neighbourhood Concept Plan process, toward achieving the protection of the identified environmentally sensitive areas while at the same time, permitting some form of adjacent sensitive development.

### ***Pedestrian and Bicycle Circulation (Linkages)***

In keeping with the concept of a complete community and in order to ensure that the future residents of Clayton can easily access all of the main facilities in Clayton, an extensive pedestrian/ bicycle circulation system is proposed. In addition to major linkages between neighbourhood school/park sites and amenities, the existing gas transmission right-of-way will be utilized as a major east-west greenway (except for where it traverses Aloha Estates) connecting Clayton with Fleetwood to the west and Langley Township to the east.

### ***Future Urban Area (North of 72 Avenue)***

The area generally north of 72 Avenue has been identified on the General Land Use Concept as “future urban”. This area is currently designated in the Official Community Plan as SUBURBAN, but has also been identified as a long term development area (subject to neighbourhood planning processes). Apart from some development interest in properties immediately north of 72 Avenue (see outstanding issues below), it appears that the area is not experiencing a demand for urban development. In addition, many of the residents wish to retain their rural lifestyle, at least for the medium term. Consequently, the area has been identified as future urban but will not be opened up for urban land uses until the Neighbourhood Concept Plan process has been undertaken and the lands are redesignated to URBAN in Surrey’s Official Community Plan. At that time, issues such as the type and form of urban development and the matter of adequate transition areas between urban and permanent suburban areas will be addressed.

### ***Institutional***

The Clayton General Land Use Concept provides for two future institutional sites within the Village Centre in the vicinity of the Secondary School and commercial node. Another institutional site (owned by a local church group) is identified along the Fraser Highway at 68 Avenue. These sites are intended to accommodate such land uses as churches, seniors’ facilities and housing, civic facilities, care facilities and general public assembly uses.

### **Phasing Issues**

As more specifically described in the Clayton Master Drainage Plan and servicing reports, the timing of development in Clayton will be managed in accordance with the ability of the Serpentine Drainage System to accommodate storm water flows as well as the ability of the owners/developers to upfront the servicing costs. The public and property owners, through the land use planning and drainage planning processes have been advised of the servicing constraints and of the major impact drainage issues have on the General Land Use Concept for Clayton.

The related reports from the Engineering Department will further outline the issues related to servicing, phasing and drainage.

### **Engineering Issues**

A general servicing strategy and overall road pattern has been developed to accompany the General Land



Use Concept. These issues will be addressed in a report and accompanying recommendations from the Acting General Manager of Engineering which is to be considered by Council concurrently with this report.

In addition, a Master Drainage Plan has been prepared in concert with the Land Use Concept. A report and recommendations from the Acting Manager of Engineering regarding the Drainage Plan will also be considered concurrently with this report.

### **Outstanding Issues (Appendix VI)**

There are a number of issues arising from the general planning process which will be resolved during the Neighbourhood Concept Plan process. These issues are outlined below and are described in more detail in Appendix VI attached.

- 1) Alignment of 192 Street Near Fraser Highway
- 2) Servicing Limits North of 72 Avenue
- 3) Status of 196 Street - Fraser Highway to 72 Avenue
- 4) Aloha Estates - Existing Pocket of One Acre Lots
- 5) School, Park Site & Greenway/Linkage Locations
- 6) Property Acquisition for Detention Ponds, Schools & Parks
- 7) Use of Alternative Planning/Zoning Tools for Protecting Environmentally Significant Areas
- 8) Defining the Concept of Live/Work Developments
- 9) Adjustments to General Land Use Concept Due to the Applicability of Sustainable Development Principles.

### **The Next Step - Detailed Neighbourhood Concept Plan**

#### ***Planning Process for East Clayton***

Following the approval of the General Land Use Concept presented in this report, staff will commence preparing a detailed Neighbourhood Concept Plan for East Clayton (the lands designated URBAN in the Official Community Plan). Staff will again be working with a re-structured Citizen Advisory Committee, with a technical team of City staff and consultants, and with the public. As part of the detailed planning process, a financial plan and servicing strategy will be prepared to ensure that Clayton can be developed cost effectively.

#### ***Incorporation of Sustainable Development Principles, Standards and Practices***

The City has embarked on an important policy direction related to ensuring that Surrey's new urban communities incorporate the principles of sustainable development. Clayton, particularly East Clayton, presents an ideal opportunity to implement the principles of sustainability by introducing standards and development practices consistent with global and regional sustainability objectives. It is proposed that detailed planning for the East Clayton area incorporate at least seven principles of sustainable development. These principles arose from a series of charettes and workshops in Surrey, conducted in association with the James Taylor Chair in Landscape and Livable Environments (UBC). The matter of sustainability was discussed with City Council at a shirt-sleeve session in July, 1998. The sustainable development principles are outlined in Appendix VII. Staff is seeking Council's approval to explore innovative servicing, storm water management, road standard and neighbourhood planning ideas with a view to incorporating them in a Neighbourhood Concept Plan and community consultation process for East Clayton.

In addition, the City has been approached to participate, along with other government agencies and industry representatives, in a Sustainable Development Demonstration Project. This is intended to be an actual development project, reverse engineered to incorporate sustainable development innovations. City staff is working with the development industry and an Advisory Committee in securing a suitable site for this project. A number of sites have been identified within

the Clayton area, and in the context of planning for a sustainable and complete community, these sites may be considered suitable. Once a site has been selected (whether it be in South Newton which was the subject of the charettes, or Clayton), a report will be forthcoming for Council's consideration.

## CONCLUSION

A City project team, in consultation with the property owners and the public, have prepared a General Land Use Concept for the Clayton area. The intent of this Land Use Concept is to provide the basic framework within which more detailed Neighbourhood Concept Plans can be prepared and development can occur in an orderly and coordinated manner. It is proposed that in early 1999 the Neighbourhood Concept Plan process commence for East Clayton, and that sustainable development principles, standards and practices be incorporated into the detailed plan.

The General Land Use Concept for Clayton addresses the objectives identified by the community as a whole, and is consistent with the policy framework identified in Surrey's Official Community Plan. It is therefore recommended that, subject to Council's concurrence with the related reports from the Engineering Department, the General Land Use Concept for Clayton and the issues discussed in this report, be endorsed.

Murray D. Dinwoodie  
General Manager  
Planning & Development Department

### Appendices:

- Appendix I: Clayton General Land Use Concept
- Appendix II: Clayton Community Structure Plan
- Appendix III: Clayton Study Area Boundary
- Appendix IV: Clayton General Land Use Concept - Planning Process
- Appendix V: Planning Objectives for the Clayton Community
- Appendix VI: Outstanding Issues
- Appendix VII: Some Principles of Sustainable Development

## APPENDIX IV

### CLAYTON GENERAL LAND USE CONCEPT PLANNING PROCESS

TASK HELD	TASKS COMPLETED	MEETINGS
1.	Initiate Planning Study & Seek General Comments	Introductory
Public Meeting		
Confirm CAC membership		
Distribute questionnaire (June, 1996)		Public meeting
2.	Selection and Orientation - Citizen Advisory Committee Prepare back-ground materials/mapping - Clayton area & planning process	
Prepare background material - CAC membership		
Compile results of questionnaire		
Finalize Terms of Reference & call for consultant proposals (Engineering/Environment) * CAC meeting (October, 1996)		
3.	Establish Issues & Objectives	Consult with
City Departments		
Consult with external agencies (e.g. ALC, Langley)		
Hire consultants (Engineering/Environment) *		
Consult with public & advise them of the members of the CAC stakeholder meeting (Nov., 1996)		Internal
External stakeholder meeting (Nov., 1996)		
Public workshop (Nov., 1996)		
4.	Document Opportunities & Constraints	Compile &
review results of public & other consultation		
Evaluate & present data (including environmental & engineering); & discuss general direction for options	CAC meeting (January, 1997)	
CAC meeting (March, 1997)		
5.	Generate Land Use Alternatives	Prepare 3 land
use options		
Options reviewed by consultants, City Departments		
Brainstorming session with CAC		
Present options to the public (April, 1997)		CAC meeting
Public meeting (May, 1997)		
6.	Select Preferred Land Use Alternative	Compile &
review results of public & other input		
Prepare preferred conceptual plan & present to CAC (August, 1997)		CAC meeting
CAC meeting (September, 1997)		
7. Prepare Engineering Reports, Master Drainage Plan &		

**Finalize Preferred Land Use Concept** **Prepare &**  
**finalize servicing concept**  
**Prepare & finalize Master Drainage Plan**  
**Present preferred servicing concept, Master Drainage Plan & land use plan to the public \***  
**Review results of public meeting**  
**Obtain endorsement from environmental & other government agencies \***  
**Make modifications to land use (if applicable)** **CAC meeting**  
 (November, 1997)  
**Public meeting**  
 (December, 1997)  
**CAC Meeting (March, 1998)**  
**Final Public Meeting**  
 (May, 1998)  
**8. Seek Council's Approval** **Prepare re-**  
**ports**  
**Submit General Land Use Concept to Council for approval**  
**Council meeting**  
 (December, 1998)  
**CAC: Citizen Advisory Committee** **ALC: Agricultural Land Commission**  
**\* Note: A consultant was engaged to prepare the Clayton Master Drainage Plan concurrently with the General Land Use Concept**

## APPENDIX V

### PLANNING OBJECTIVES FOR THE CLAYTON COMMUNITY

The following planning objectives for Clayton resulted from the consultative process, and provided direction for preparing the General Land Use Concept:

#### *General*

- To establish Clayton as a “complete community” whereby it is generally self-contained with a range of housing, services and employment opportunities.
- To establish a distinct community identity for Clayton.
- To ensure that Clayton is planned, coordinated and developed in efficient stages over the long term (10-20 years).
- To establish individual neighbourhoods designed to have their own recognizable structure while also forming part of the larger identifiable Clayton community.
- To recognize Willowbrook as a strong attraction for Clayton, and to ensure land use compatibility along the Langley border.
- To enable the future residents of Clayton to have the opportunity to work close to home.
- To ensure that Clayton will have an abundance of open space, green corridors and protected wildlife areas to allow the residents to enjoy passive and active outdoor activities and to keep some of the rural ambiance which currently exists in Clayton.

#### *Housing and Housing Densities*

- To provide a variety of housing types to accommodate a range of lifestyles.
- To recognize and protect existing established residential subdivisions, and to recognize that they have set a certain character that should be carried through the plan area.
- To consider higher residential densities (e.g. townhouses/garden apartments) near the Willowbrook/Langley area.
- To establish Clayton as a unique “rural” residential area within the lower mainland, especially areas near the Agricultural Land Reserve and where existing subdivisions have already set a rural character.

#### *Commercial/Industrial*

- To recognize the Cloverdale Town Centre and the Willowbrook Mall as important service centres for Clayton.
- To provide local shopping opportunities and to establish a neighbourhood village centre to provide some limited neighbourhood services.
- To provide local job opportunities for Clayton residents.
- To accommodate economic development and local jobs by establishing a workplace area within Clayton near the Fraser Highway.

#### *Agricultural*

- To recognize and protect the Agricultural Land Reserve Boundary and its interface with suburban/urban development.

- To take advantage of the view opportunities provided on the slopes adjacent to the Agricultural Land Reserve.
- To use the “agricultural heritage” and ambiance of Clayton in determining the built character and form of the buildings in Clayton.

### ***Parks/Open Space/Natural Areas***

- To retain significant environmental features including rivers, creeks, and important stands of vegetation.
- To ensure that Clayton has a variety of sizes and types (e.g. active and passive) of parks to serve the residents.
- To locate neighbourhood parks, open space and recreational facilities where they can be reached by Clayton residents on foot or by bicycle.

### ***Cultural/Social Facilities, Schools & Institutions***

- To retain significant cultural and heritage features, including historic buildings and Clayton Hall/Park.
- To provide the necessary schools and playing fields to serve the projected population of Clayton.
- To establish a “neighbourhood centre” where cultural, social and other facilities could be located to adequately serve the residents of Clayton.

### ***Roads/Transportation/Pedestrian and Bicycle Circulation***

- To maintain the established grid or “traditional” road pattern in Clayton.
- To use the road system and road standards to help define the rural character of Clayton.
- To ensure that Clayton is well served by public transit.
- To create walkable neighbourhoods by creating opportunities for pedestrian/bicycle routes to link the focal points in the community and the parks and agricultural lands.
- To ensure that Clayton is well served but self-contained in terms of a transportation network and that regional vehicular traffic is not routed through neighbourhoods but routed around them.
- To ensure that residential areas are not negatively effected by traffic on the Fraser Highway and other major traffic routes.

### ***Infrastructure and Servicing***

- To ensure the cost-efficient provision of adequate City services including sewer, drainage, water, roads and utilities, without placing a financial hardship upon the City’s resources.

### ***Coordination***

- To recognize the interrelationship of Clayton with Langley and Cloverdale especially with respect to commercial, institutional and transportation needs.

## **APPENDIX VI**

### **OUTSTANDING ISSUES TO BE ADDRESSED IN THE DETAILED NEIGHBOURHOOD CONCEPT PLAN (NCP)**

The following outstanding issues have been identified through the planning process, and must be addressed during the preparation of the Neighbourhood Concept Plan for East Clayton:

#### ***1. Alignment of 192 Street Near Fraser Highway***

The General Land Use Concept for Clayton proposes a realignment of the south leg of 192 Street (a major arterial) where it meets the Fraser Highway. Operational problems have been identified at the intersection of Fraser Highway, 64 Avenue and 192 Street, and this realignment appears to be feasible, although a complete analysis of this option and others will be undertaken in conjunction with the Neighbourhood Concept Plan.

#### ***2. Servicing Limits North of 72 Avenue***

A number of property owners north of 72 Avenue (east of 188 Street) have expressed concern that their lands were not designated URBAN along with those south of 72 Avenue in East Clayton. The owners are making the argument that their lands could possibly be serviced (especially by sanitary sewer) at the same time as East Clayton. In a meeting with the owners, City staff committed to exploring the northerly limit to which properties north of 72 Avenue could be serviced. This will require a technical analysis of slopes and some topographic work. If some lands are financially and technically able to be serviced, consideration may be given to including them in the Neighbourhood Concept Plan process.

#### ***3. Status of 196 Street - Fraser Highway to 72 Avenue***

The Engineering Department has recently commissioned a Functional Road Study of the Fraser Highway near Clayton which also has implications for the width, right-of-way requirements and function of 196 Street. The design and function of 196 Street (from the Fraser Highway to 72 Avenue) and its implications for adjacent land uses, will be further examined during the Neighbourhood Concept Plan process.

#### ***4. Aloha Estates - Existing Pocket of One Acre Lots***

Several residents of Aloha Estates (an existing one-acre subdivision near the south-east corner of 72 Avenue and 192 Street) have advised City staff they do not necessarily support urban residential adjacent to their one-acre lots. Property owners from Aloha Estates are on the East Clayton Citizen Advisory Committee and staff will work with them to explore ways to alleviate any impacts of urban development on the existing subdivision.

#### ***5. School, Park Site & Greenway/Linkage Locations***

Given the general nature of the plan, elementary school/park catchment areas and site size requirements have been identified, but precise locations for new school/park sites have not been selected. The location of schools, parks, open space and greenways/linkages will be ascertained through the Neighbourhood Concept Plan process. It is noted that the greenways and linkages will be located in such a way to link the schools, parks and amenities/focal points in the community and therefore their precise location will be determined when the corresponding destination sites are selected.

#### ***6. Property Acquisition for Detention Ponds, Schools & Parks***

Policies and strategies to address the acquisition of detention ponds, schools and parks will be considered during the Neighbourhood Concept Plan process.

With respect to school site acquisition, the Provincial government has passed the legislation (Bill 35) enabling the introduction of a new charge, similar to a development cost charge, to raise funds to acquire school sites and

build schools. The legislation was recently passed and the enabling regulations are expected to be enacted in early 1999. The School District is expected to consult with the City toward identifying school site needs and timing of acquisition/construction after which appropriate levies on development would be implemented. The Surrey School District advised City staff that the Province is expected to provide 65% of the capital funding for new schools while the remaining 35% would be provided by developers through the levy.

The City has acquired several properties in Clayton, and provisions have been made in Surrey's park acquisition plan to acquire all park sites identified through the Neighbourhood Concept Plan Process.

The costs and specific locations of detention ponds identified in the Land Use Concept (and Master Drainage Plan) will be determined in the next stage of planning. Strategies to acquire properties for ponds will be pursued and, toward creating a sustainable neighbourhood, alternative storm water management practices will be explored with a view to reducing the size and property requirements for detention ponds.

#### **7. *Use of Alternative Planning/Zoning Tools for Protecting Environmentally Significant Areas***

It has been noted that there are a number of large forest blocks and significant watercourses in Clayton. In accordance with the community's objective to retain open space and the rural ambience in Clayton, staff will be exploring ways to retain these forest blocks without having to acquire the land for park purposes. Zoning tools such as density bonusing and density transfer are examples of methods used to achieve environmental protection without negating the development aspirations of the property owners.

#### **8. *Defining the Concept of Live/Work Developments***

Specific densities and forms of the live/work developments proposed in Clayton will be determined during the Neighbourhood Concept Plan process. This type of housing/work opportunity is not currently available in Surrey and research is required to adapt this innovative product to the conditions in Clayton.

#### **9. *Adjustments to General Land Use Concept Due to the Applicability of Sustainable Development Principles***

In designing sustainable neighbourhoods in Clayton, the Neighbourhood Concept Plan process may result in some minor adjustments to the general land use designations identified on the General Land Use Concept.



## APPENDIX VII

### SOME PRINCIPLES OF SUSTAINABLE DEVELOPMENT TO BE INCORPORATED INTO THE NEIGHBOURHOOD CONCEPT PLAN

***Principle No. 1***

Increase density to conserve energy by the design of compact walkable neighbourhoods to encourage pedestrian activities where basic services (schools, parks, transit, shops, etc.) are within 5 to 6 minutes walking distance from their homes.

***Principle No. 2***

Different dwelling types (a mix of housing types, a broad range of densities from single family homes to apartment buildings) in the same neighbourhood and even on the same street.

***Principle No. 3***

Communities designed for people; therefore all dwellings present a friendly face to the street to promote social interaction.

***Principle No. 4***

Car storage and services handled in lanes at the rear of dwellings.

***Principle No. 5***

Interconnected street network, in a grid or modified grid pattern, to provide for a variety of itineraries and to disperse traffic congestion; and public transit to connect with the surrounding region.

***Principle No. 6***

Narrow streets shaded by rows of trees to save costs and to provide a greener and friendlier environment.

***Principle No. 7***

Preservation of the natural environment and promotion of natural drainage systems where storm water is held on the surface and permitted to seep naturally into the ground.

# **APPENDIX 2**

**2.1 Charrette Constituency Representatives**

**2.2 Charrette Issues and Resolutions**

## Appendix 2.1 Charrette Constituents

Constituencies of Interest	Participants	Workshop Date & Location	Design Table Spokesperson	Issues
Developers	John Turner, Progressive Carla Kalke, Parklane James Evans, Suncor Ladan Ahmadzadeh Steve Hall, CMHC Kelvin Neufeld, Fraser Valley Real Estate Board Raghibir Gurm, Bridgewater Development Corp.	Feb 2 Clayton Community Hall	John Turner, Progressive Contracting Ltd.	-integrate open space uses to serve multiple functions -fees and levies currently discourage the construction of smaller units and secondary suites --flexibility in the plan to respond to market changes and allow for innovation -the sustainable concepts are marketable with challenges - forestry should serve both a function and aesthetics -blend densities -parking on street or in back lanes -consumer education is key to maintaining
City of Surrey	How Yin Leung, Judith Robertson, Wendy Whelen, Francisco Molina, Kris Nichols, Planning Eric Emery Leif Bjorseth Engineering, Ken Zondervan, Roads and Transportation Jean Lamontagne, Greg Ward, Parks, Rec and Culture John Strandt, Marc Berube, Fire Shirley Steele, RCMP Jane Farquharson Sudu Vatagodakumbura, Reid Crowther	February 22 Planning Room 1, City of Surrey	How Yin Leung Wendy Whelen, Planning  Eric Emery Engineering  Jean Lamontagne Parks  John Strandt Fire	-need to incorporate alternatives for drainage -alternatives for street widths and servicing are required - integrate ideal sites for parks and water detention for cost effectiveness -allocate adequate space for trees -establish parking performance standards -resolve safety in back lanes -reduce City maintenance costs, i.e. increasing costs associated with trees and concrete competing for the same space -factor in liability issues early in the process -educate consumers and builders
City of Surrey Operations	Gerry McKinnon, Dale Hadden, Jeff Thomson, Operations Carrie Baron, Engineering	March 5 Works Yard, City of Surrey	Gerry McKinnon Dale Hadden Operations	-educate consumers and builders
Environment	Dave Nanson, Barry Chilibeck, DFO Marie Lou Verge, Environment Canada Brent Moore, Miles Stratholt, Krista Payette Environment, Lands & Parks Lynne Holt, Ross Wetzel, Surrey Environmental Advisory Committee Mike Bose, Surrey Agriculture Advisory Committee Mark Salerno, CMHC David Melnychuk, Agriculture & Food Bruce Gunn, Agricultural Land Commission	March 4 Clayton Community Hall	Barry Chilibeck DFO Erin Stoddard MELP	-establish a monitoring program to document the goals and the extent to which they are achieved -consider natural habitat protection -take the notion of sustainability to the household level(SMART houses) -increase awareness and stewardship through consumer education -monitor and promote energy use and efficiency -establish municipal official and decision maker buy-in
Utilities and Services	Ron Baker, Gary Richert, BC Tel Martin Kobayakawa, Translink Tom Vine, BC Hydro Robin Kingman, Canada Post Jennifer Woods, Roger's Cable	March 17 Clayton Community Hall	Allan Grant BC Hydro	-integrate transit and land use planning -explore alternative approaches to servicing in the Clayton area -postal services need to be involved at the time of subdivision -underground servicing is more efficient in higher density areas -lane width needs to accommodate all utilities
Community	Clayton Area Citizens Committee East Clayton Citizens Advisory Committee East Clayton Property Owners Society(Executive) Clayton Community Association (Executive) Port Kells Community Assoc. (President)	March 23 Clayton Community Hall	Norman Alexander CAC	-build trust in the planning process -safety and maintenance of back lanes is a concern -City by-laws currently prohibit aspects of the sustainable alternative -Will sustainability concepts translate well into Clayton, it is not an urban centre?

## Appendix 2.2 Charrette Issues and Resolutions

Issues	Workshop #	Identification						Resolved (1)			Status							
		Public	Charrette		CAC	Open House	Resolved (1)			Pending (2)								
			Design Team	Working Sessions			Design Team	Sub-table	External (3)	Design Table	Sub-table	Demonstration (4)	External					
<b>Planning</b>																		
<b>Densities</b>																		
<b>Land Uses &amp; Allocation</b>																		
	Residential																	
	Mixed Uses																	
	Commercial																	
	Business Park																	
	Live/Work																	
	Work/Live																	
	Schools/Parks/Civic																	
<b>Infrastructure</b>																		
	Drainage																	
	Water/Garbage																	
	Integrated Green Infrastructure																	
<b>Utilities/Services</b>																		
<b>Transportation</b>																		
<b>Design</b>																		
	Transit																	
	Arterials/Collectors																	
	Local Streets																	
	Parking																	
	Lanes																	
<b>Designation</b>																		
<b>Energy</b>																		
	Greenhouse Gas Reduction																	
<b>Public Safety</b>																		
	Street Pattern/Width																	
	Lanes																	
	Building Form																	
	Crime Prevention																	
	Facilities																	
<b>Natural Environment</b>																		
	Green Spaces																	
	Riparian Zones																	
	Forestry																	
	Natural Habitat																	
	Water Quality																	
	Soils																	
<b>Agricultural</b>																		
<b>Lowlands</b>																		
<b>Marketability</b>																		
<b>Liability</b>																		
<b>Planning Process</b>																		
	Resident/Landowners																	
	Building Trust																	
	Policy Makers																	
	Buy-in																	
<b>Design/Construction</b>																		
	Integrated Green Infrastructure																	
	Natural Drainage System																	
	Landscaping																	
	Urban Forestry																	
	Fire/Public Safety																	
	Cross Sections																	
<b>Energy</b>																		
	Smart Housing																	
	District Heating																	
	Mixed Uses																	
<b>Regulatory System</b>																		
	Flexibility																	
	DCCs/Fees/Levies																	
	Land Development System																	
	Compensation																	
<b>Stream Monitoring</b>																		
<b>Life Cycle Costs</b>																		
<b>Maintenance</b>																		
<b>Marketing</b>																		

Notes:  
 (1) Resolved: Issue is advanced towards resolution or resolved.  
 (2) Pending: Issue is advanced and needs more attention.  
 (3) External: outside the scope of Planning Process.  
 (4) Demonstration: actual development.

# APPENDIX 3

## Charrette Design Brief

*Note:* The Design Brief provided a number of important performance targets for the charrette. During the charrette process, some targets were amended. These amendments are reflected in the NCP.

# **The East Clayton Neighbourhood Concept Plan and Sustainable Development Demonstration Project**

## **DESIGN BRIEF**

**Part I**  
**April 14/15, 1999**

**Part II**  
**May 4/5 1999**

### **Sponsors**

**B.C. Ministry of Municipal Affairs**  
**Department of Fisheries and Oceans**  
**Environment Canada**  
**Federation of Canadian Municipalities**  
**Greater Vancouver Regional District**  
**Real Estate Foundation of B.C.**

**Canada Mortgage and Housing Corporation**  
**B.C. Ministry of Environment, Lands and Parks**

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**Design Brief**

**Appendix 1: Current Issues Identified in Constituency Workshops**

**Appendix 2: Matters Arising Out of East Clayton NCP Workshops**

# The East Clayton Neighbourhood Concept Plan and Sustainable Development Demonstration Project

## Design Brief

This document provides both general and explicit instructions for the design of the East Clayton district of Surrey. It is intended to be used as a means to first provoke discussion, and then agreement, between the many stakeholder agencies and entities involved in the process. When the elements of that agreement are incorporated into this document, it will be used as the primary basis for the design proposals for East Clayton.

This project has been possible because of the generous support received to date from the Real Estate Foundation of B.C., Environment Canada, B.C. Ministry of Municipal Affairs, Federation of Canadian Municipalities, Greater Vancouver Regional District and Department of Fisheries and Oceans.

## Goal and Objectives of the East Clayton NCP and Sustainable Development Demonstration Project.

### Goal:

To build a community in the East Clayton area of Surrey that meets local, provincial and federal policy objectives for sustainable development.

### Objectives:

1. Produce a more sustainable community design model for Surrey and other British Columbia communities.
2. Work out and resolve the contradictions between often contradictory sustainability policy objectives.
3. Demonstrate the connection between sustainability and desirability
4. Resolve the conflicts between typical community subdivision and site and traffic engineering regulations and sustainability design objectives
5. Create a setting where designers can facilitate resolutions between those agencies and entities whose mandates can often be in conflict.
6. Broadly disseminate the results of this process through a variety of means and venues – to citizens, elected representatives, policy makers, and designers – and thereby influence the future urban development of our region.

## City of Surrey Sustainability Principles for the East Clayton District.

The City of Surrey has added special new provisions for the Clayton District that have not previously applied in other development areas. By act of Surrey City Council, December 1998, the City has instructed staff to explore the application of sustainable development principles, standards and practices during the detailed Neighbourhood Concept Planning Process for East Clayton. The specific principles so identified are as follows:

1. Different dwelling types (a mix of housing types, a broad range of densities from single family homes to apartment buildings) in the same neighbourhood and on the same street.
2. Increase density to conserve energy by the design of compact walkable neighbourhoods to encourage pedestrian activities where basic services (school, parks, transit, shops, etc.) are within five to six minute walking distance from their homes.
3. Communities designed for people; therefore all dwellings present a friendly face to the street to promote social interaction.
4. Car storage and services handled in the lanes at the rear of dwellings.
5. Interconnected street network, in a grid or a modified grid pattern.
6. Narrow streets shaded by rows of trees to save costs and provide a greener and friendlier environment.
7. Preservation of the natural environment and promotion of natural drainage systems where water is held on the surface and permitted to seep naturally into the ground.

## The Development of the Performance Criteria and the Design Brief for the East Clayton NCP.

The following document is intended to encapsulate, in words, all of the requirements for the new community. The process of producing this document had two stages. First we culled through the key policy documents relating to sustainable development that have been promulgated in the past few years. These works include: The British Columbia Energy Council, Planning Today for Tomorrow's Energy. An Energy Strategy for British Columbia; BC Hydro, Bringing Electricity to the Livable Region (BCH); The City of Vancouver, Clouds of Change, Final Report of the City of Vancouver Task Force on Atmospheric Change (CV); The Commission on Resources and Environment: Finding Common Ground: A Shared Vision for Land Use in British Columbia (CORE); The Province of British Columbia: Municipal Act Section 942 and Section 945 (Growth Management Legislation);(MA) The Greater Vancouver Regional District: Livable Region Strategic Plan (LRSP); BC Transit, Transit and Land Use Planning (BCT). These policy documents have provided the basis for not just this project, but have been key documents informing *previous Sustainable Urban Landscapes Design Charrettes* and the design principles for sustainable communities that have emerged from that work. In addition to these regionally applicable documents, we have also incorporated documents particular to the City of Surrey. Included in this second category are: The Clayton Neighbourhood Concept Plan: General Land Use Concept (CNCP), and the City of Surrey Official Community Plan (OCP).

These publicly arrived at policy documents have been scanned for items that have implications for community design. These items are used as the primary and initial basis for the many design directives contained herein (referenced where appropriate). Consequently this document is based only on publicly arrived at policy. In this way the community design resulting from this project should reflect that policy, and be neither more, nor less than the public has mandated. Policy directives included in these reports that have an obvious impact on site and community design have been converted into design *performance criteria* or the *design brief* as appropriate. The *performance criteria* are listed in the first section below in three categories: land and water; the built environment, and energy use. These criteria all support the goal of more sustainable neighbourhoods and communities; however, they are often contradictory when applied. The *design brief* makes up the second part of this document. It contains the more empirical and specific requirements for the community, spelling out (among other things) specific residential densities and number of acres of recreation required per thousand inhabitants.

We held a series of workshop meetings with the various stakeholder groups during the second stage of building this document. These meetings involved scores of people from an almost equal number of agencies and entities; however, they were grouped into a more limited number of categories by common interests and agency mandates. These categories included: the city, environmental managers, transit providers, citizens, developers, education providers, other impacted communities (Langley City and Langley Township), and energy providers to name a few. At these meetings we solicited specific performance targets for the new community as seen from their perspective. We used these performance targets to help calibrate the *performance criteria* and the *design brief* to the specific constraints and opportunities inherent to the East Clayton district.

### Performance Criteria for the 1999 East Clayton NCP and Sustainable Development Demonstration Project Design Charrette:

Policy directives included in the above listed reports that have an obvious impact on site and community design have been converted into the design performance criteria listed below. They fall into three categories: land and water; the built environment, and energy use. These criteria all support the goal of more sustainable neighbourhoods and communities; however, they are often contradictory when applied.

#### The Land and Water

The goal of British Columbian and Canadian public policy is to protect the ecological integrity of our land and rivers, both for their intrinsic value and for their value to present and future citizens. The organisers assume that urban development that protects the ecological integrity of the land and water must start “from the ground up.” The ecological health of the region is dependent on the ecological health of the sites that make up the region. For exam-



ple, degraded storm-water (non point-source pollution) shipped “off sites” into streams and tributaries is the major threat to the health of Georgia Basin salmon streams. The rivers and streams that empty into the Georgia Basin comprise the world’s most important salmon producing ecosystem; extraordinary efforts are required to protect it.

1. Environmental Protection. Protect and enhance all environmentally sensitive and/or degraded areas (wetlands, watercourses, ravines, watersheds, ground water recharge areas, critical wildlife habitat areas, areas with fragile or unstable soils) maintaining and/or enhancing the ecological performance of native habitats, hydrology, and landforms.<sup>1</sup>
2. Open Space Linkage. Preserve, create, and link urban and rural open space, including parks and recreation areas. Maintain and enhance public access to streams, where environmentally sustainable.<sup>2</sup>
3. Open Space Quality. Identify and enhance special recreation opportunities within the site, i.e. streams, topographic features, natural areas etc.<sup>3</sup>
4. Integrate Green Infrastructure and Natural Drainage:
  - a) Protect natural habitat and improve stream flows and water quality to contribute to fish protection consistent with federal and provincial fish protection legislation.
  - b) Create an integrated and linked system of green and open spaces that serves multiple functions.
  - c) Integrates an urban forestry strategy with a water conveyance strategy: Incorporate natural drainage infrastructure compatible with fire protection systems.
5. Storm drainage. Insure that the storm drainage system does not alter stream hydrology. Explore the use of natural drainage systems to this end.

### **The Built Environment**

The goal of British Columbian and Canadian public policy is to provide adequate, affordable, and appropriate housing for all citizens.

A more sustainable site and community design must integrate, not segregate land uses, income groups, and family types. Services and jobs must be located near homes and transit. Participants are challenged to develop a plan that integrates and locates these various land uses.

The dominance of the automobile in our new urban landscapes must be significantly reduced. Destinations must be close and convenient before walking and biking can be viable alternative to the car. Participants must produce designs that will *connect* people with their destinations so that the car is *not* the *only* option.

1. Housing Equity. Provide a balance of housing types that meet the needs of a range of ages and lifestyles and are affordable to groups and individuals within a wide range of incomes. At least 20 of the housing shall be for persons with family incomes in the bottom third.<sup>4</sup>
2. Density & Mixed Housing: Supply higher density housing in areas in proximity to commercial areas. Mixed housing and densities are to be blended and balanced. Interfacing with existing uses—built residential areas, agricultural, commercial/industrial—using compatible densities, housing type, lot sizes and effective buffering.
3. Special Needs Housing. Provide adequate special needs housing (seniors, disabled, family crisis victims etc.)<sup>5</sup>
4. Safety. Employ proven methods of enhancing community safety and sociability.<sup>6</sup>
5. Public Safety and Fire Systems: Ensure fire equipment can be maneuvered effectively through the streets. Set definitive service boundary for the provision of fire protection and ambulatory services—Clayton, East

Clayton area.

6. Jobs. Provide workspace in commercial, office, or light industrial facilities for the working population. The Clayton Neighbourhood Concept Plan calls for over 1,275,000 sq. ft. of “business park” and nearly 400,000 sq. ft. of “business residential” live-work space. <sup>7</sup>
7. Schools: Locate schools away from major transportation corridors, within five minute walking distances from residential units and in quieter neighborhoods.
8. Integration of Land Uses. Create a mix of building and land uses, integrating residences, work, shopping, and services (community, professional, commercial and institutional).<sup>8</sup>
9. Lane system: Ensure municipal services and utility work crews can access lanes with appropriate width and surface materials. Explore the use of various permeable low cost materials for surfacing lanes.
10. A utilities and technical system:
  - a) Determine the mix, if any, of overhead and underground services
  - b) Utility trenches need to be wide enough to ensure accessibility by all utilities reducing possibility of utilities accidentally interfering with each other’s equipment.
  - c) Ensure ease of access to meters or assume remote reading devices.
  - d) Protect and secure electrical and telephone service boxes.
  - e) Provide adequate lighting
  - f) Identify a location in East Clayton for a telephone main station to provide high speed features that support computer and home office use. Locate in a central location in the planning area that will ensure a maximum distance for servicing wire of 3 kilometers. A 7mX7m area is required to house highly sensitive switching equipment—stand alone housing unit or a public facility.
11. Access to Transit. Ensure that most persons live and work close to transit and services to reduce dependence on the automobile, promote pedestrian activity and bicycle use.<sup>9</sup>  
Fraser Highway has been designated as a major transit corridor. Develop ways to allow commercial, transit, pedestrian, housing, and cars to all occupy this corridor. Adapt existing guidelines to sustainability standards.
12. Interconnected Street System: Local transportation must compliment the regional and whole planning area transportation requirements. Set road design elements within sustainable development design:
  - a) Roadway width
  - b) Intersection corner radii
  - c) Intersection angle
  - d) Design speed, operating speed
  - e) Traffic volumes
  - f) Street type hierarchy
  - g) Local road network layout
  - h) Parking lanes and width
  - i) Lighting
  - j) Turning lanes
  - k) Driveway width, grade, paired/shared

### **Consider traffic calming devices to meet sustainable development performance standards**

13. Parking Systems: Set parking standards assuming 10units/acre gross density overall. Parking in

streets or on lots.

**14. Design/Construction/Building:**

- a) Integrate the urban forestry strategy, the water conveyance strategy and the integrated green infrastructure.
- b) Incorporate postal service requirements at the design stage.
- c) Ensure contractors at the construction stages adhere to guidelines for dealing with the disturbance and replacement of soils to maintain filtration rates.
- d) Build in contingencies for landscape development, including provisions for maintaining the placement of aggregates where necessary until they stabilize including subdivision green spaces and natural drainage areas.
- e) Place fee simple units on the market but do not use block strata.

**Energy Use**

The goal of British Columbian and Canadian public policy is to reduce energy consumption and the pollution that this consumption causes, even while population continues to increase. Any progress toward a more sustainable future will require large per capita reductions in the amount of energy required for building conditioning and transportation. Many of the gains to be made in this area lie in the realm of improved building technologies and improved vehicle efficiencies, and are thus outside the scope of this site and community design demonstration project. However, certain site and community design factors can powerfully affect the amount of energy required for building conditioning and transportation.

District heating can be practical at certain densities and site configurations. Geothermal technologies are available for small scale or district scale installation. Solar access for winter warmth is significant in our region, where the coldest winter days tend also to be the sunniest. West facing dwelling units (with the large expanses of glass common in our region) require summer air conditioning - even though our summers are quite cool. Urban forests can significantly influence energy use. Participants are challenged to design the community with due regard for climatic imperatives.

Integrating land uses and accommodating pedestrians and bicycles can cut per capita consumption of energy for transportation by almost half.<sup>10</sup> Participants should show how pedestrians and bicycles are accommodated and how destinations are located within walking distance of services, transit, and jobs.

- 1. Solar Heat. Reduce building energy requirements by providing optimal solar orientation for active and passive solar heating, for hot water, and for day lighting.<sup>11</sup>
- 2. Energy Infrastructure. Aim for the efficient use of utility infrastructure by considering utility system design as part of the community design. Clayton Neighbourhood Concept Plan: General Land Use Concept (CNCP)<sup>12</sup>
- 3. Alternative Energy. Provide as appropriate, or maintain flexibility to provide in the future, energy service from alternative technologies such as community scale generating systems, district heating and co-generation.<sup>13</sup>
- 4. Design with Climate. Enhance community microclimate through design response to wind, sun, vegetation, and precipitation.<sup>14</sup>
- 5. Auto Trip Reduction. Reduce number and length of commuter and daily use automobile trips.<sup>15</sup>
- 6. Auto Alternatives. Provide safe, comfortable, barrier-free and direct pedestrian access to transit route. Provide a multi-modal community route system that gives walking and biking priority over auto travel.<sup>16</sup>

## Planning and Engineering Systems

### Municipal Planning Systems:

Maintain an integrated planning approach in both development of the plan policy, standards and bylaws and consistency in implementation of the plan allowing flexibility and innovation.

Protect the rights of property owners and build confidence that infringement on their ability to enjoy the legal use of their property is not infringed upon by encroachment of incompatible uses.

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# The East Clayton NCP and Sustainable Development Demonstration Project Design Brief

## RESIDENTS

### **Total Site Area:**

533 acres (net of roads)

### **Proposed Community Population<sup>17</sup>**

Minimum 13,500

Maximum 16,000

### **Proposed Total Dwelling Units**

Minimum 4,600

Maximum 6,400

### **Residential Parking Standard**

1.25 spaces per dwelling unit B .25 spaces per elderly or special needs unit.<sup>18</sup> Parking can be on street or in surface lots.

### **Gross Residential Density**

Minimum 8.6 DU per acre gross (average for entire site)

## OPEN SPACE<sup>19</sup>

Open Space: Total of 4.2 hectares per 1,000 residents

Made up of:

City Parks: 2.0 hectares per 1,000 residents

Community Parks: 0.8 hectare per 1,000 residents

Neighbourhood Parks: 0.6 hectare per 1,000 residents

Nature Preserve and Linkages: 0.8 hectare per 1,000 residents

## PUBLIC TRANSIT

Frequent transit stops on Fraser Highway. Bus stops within five minute walking distance (.5 K) of all homes.<sup>20</sup>

## COMMERCIAL

### Commercial Space<sup>21</sup>

Minimum, 20,000 sq. ft. per 1,000 population. Minimum area 6 acres net.  
Maximum, 42,000 sq. ft. per 1,000 population. Maximum area 9 acres net.

### Commercial Parking Standard

#### Light Industrial / Office

750 sq. ft. or 70 sq. mtr. (3 spaces) per 1000 sq. ft. retail. On street, underground, or off street parking. <sup>22</sup>

#### Distribution/ Corporate Office Space

39 acres corporate and other light industrial and distribution work space in approx. 1,700,000 sq. ft. Net FSR approx. 1. Up to 20 acres of this amount can include residential uses. <sup>23</sup>

## PUBLIC BUILDINGS

### Elementary Schools

Two schools at 35,000 sq. ft. (or 3,200 sq. mtr.) each, for 500 students, access to 8 acres (3.25 hectares) of outdoor recreation space (outdoor recreation space can count toward minimum open space requirement). On street or off street parking for 25 cars.<sup>24</sup>

### Child Care Facilities and Preschools

2,560 sq. ft. (240 sq. mtr.) interior space, 4,800 sq. ft. (445 sq. mtr.) exterior play space per 1,000 dwelling units. <sup>25</sup>

### Community Centre and Library

One at 36,000 sq. ft. (3,340 sq. mtr.) - on street or off street parking for 32 cars.

### Fire Hall

One at 11,000 sq. ft. (1,020 sq. mtr.).

### Churches/Multi Faith Centre with Assembly Hall

One per 4,000 population at 10,000 sq. ft. (930 sq. mtr.). On street or off street parking for 60 cars. Parking can be shared with non competing use. <sup>26</sup>

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## Bibliography

Initials that introduce each reference correspond to initials in footnotes above.

### BCEC

**Planning Today for Tomorrow's Energy: An Energy Strategy for British Columbia.** 1994. Vancouver, British Columbia: British Columbia Energy Council.

### BCH

**Bringing Electricity to the Livable Region.** 1994. Vancouver, British Columbia: BC Hydro

### BCT

**Transit and Land Use Planning.** 1994. Surrey, British Columbia: BC Transit Long Range Planning.

### CORE

**Finding Common Ground: A Shared Vision for Land Use in British Columbia.** 1994. Vancouver, British Columbia: Commission on Resources and Environment.

### CS

**City of Surrey Official Community Plan Background Report No. 1; Surrey: Existing Policies.** 1994. Surrey, British Columbia: City of Surrey .

### CV

**Clouds of Change: Final Report of the City of Vancouver Task Force on Atmospheric Change.** 1990. Vancouver,

British Columbia: City of Vancouver.

**LRS**

**Livable Region Strategy: Proposals.** 1993. Burnaby, British Columbia: Greater Vancouver Regional District. (Also see 1995 Livable Region Strategic Plan, Approved in Principle by the GVRD Board of Directors, Dec 9, 1994)

**MA**

**Bill 11 - 1995, Growth Strategies Statutes Amendment Act, 1995.** 1995. Victoria British Columbia: Province of British Columbia Legislative Assembly and Minister of Municipal Affairs. (see also: **Growth Strategies Statutes and Amendment Act: Explanatory Notes.** 1995. Victoria British Columbia: Province of British Columbia, Ministry of Municipal Affairs.)

## Appendix 1

### **Current Issues Identified by the Constituency Workshops Related to the East Clayton NCP and the Application of the Sustainable Development Standards.**

The constituency groups consulted in preparation of this design brief identified the following issues. These constituencies included City Team, Public, Clayton Advisory Committee, Environment, Agriculture, Fisheries, Utilities and Services, Transit, Developers and Energy.

#### **Different Dwelling Types**

##### *Densities and Blending Mixed Housing*

In the areas designated for construction it may be difficult to achieve 10 units per acre of gross area without certain compromises. Attempts must be made to blend residential densities throughout the East Clayton NCP area.

#### **Density**

#### **Water and Sanitary**

In the Clayton area, there are two supply areas and servicing areas known as area 1, 2 and 3 which should pose no servicing problems, although some pipes may need to be oversized. In terms of water supply, outstanding questions relate to consumption. Infrastructure must be planned based on population changes. Sanitary servicing will be based on gravity flow. By the time Clayton's population projections are realized the new servicing will be in place. Some of the servicing issues include the use of basements to increase density. Bathrooms in basements tend to lower the whole sanitary systems to gravity drain wastewater.

#### **School Development**

The school district is trying to get away from locating schools in corridors and place them in quieter areas. This could result in 5 minute walking distances in different directions. . Yet schools can also be key elements in a village center design. How can these conflicting desires be resolved?

#### **Energy Use**

Consider energy use for car trips by occupants to and from the neighbourhood.

#### **Utilities**

Telephone service to developing areas is planned on the basis of maximum density. As densities increase so does the initial capital cost for providing the service and cable size. Overhead/aerial wiring has a visual impact, which is more prevalent when densities increase and thicker cables are used. Use of aerial wiring should not be allowed on streets, possibly on lanes. Underground wiring on streets requires wider roads. Transformers and connection boxes are numerous and highly visible. Transformers can explode. The telephone utility plans for maximum density, which translates into bigger cables and higher initial costs for them.

##### *Communities Designed for People*

#### **Land Use Compatibility**

Built Residential Environments: New developments that encroach on existing built neighborhoods characterized by a quasi-rural life style usually on large lots need to be developed in a manner that respect the rights of those who have invested in that life style and expect it to be protected. For example, existing pockets of one acre or large lots such as Aloha Estates.

*Agriculture:* Account for potential conflicts that generally arise where urban and agricultural uses interface.

*Langley Township:* Account for what being done to service adjacent lands to East Clayton located within Langley Township. City boundaries must be taken into consideration.

*Commercial/Industrial:* How the principles will be applied in an industrial site will also have to be examined determined. Local work centres would allow people to work locally and reduce their reliance in the car. If you provide the alternative people can make the choice not to go downtown to work. Define the concept of Live/Work development areas.

## **Level of Satisfaction**

Although it is difficult to measure statistically, some bases for comparison of social acceptability for alternative developments should be developed and implemented.

## **Lanes**

### **Lanes and Rear Yards**

Safety issues, real or perceived, related to the use of back lanes will have to be addressed. Perceptions of crime and clutter are widespread. Some argue that putting in lanes necessarily adds to the infrastructure costs and wasted space. Other models for small lot subdivisions should be explored including wider lots with shallower backyards eliminating the need for lanes but retaining small size.

### **Municipal Services**

Lanes will need to be functional to ensure services such as garbage collection can be effectively provided. Overhanging elements will have to be taken into consideration.

### **Eliminate Swales between Properties**

The presence of lanes should alleviate the need for swales between properties. These property line swales have their own problems.

### **Maintenance**

Regular maintenance costs for gravel lanes and suggested need to be determined. Some concern exists about potential higher ordinary costs for maintaining green infrastructure streets.

### **Postal Services**

The uncertainty of the number of units will create some difficulty for the sizing and siting of delivery service boxes. Mail assumes that one point of access is available to each subdivision and that most mail pick-ups will be made by folks stopping their cars on the way in and out. This contradicts pedestrian orientation and interconnection sustainability principles.

### **Natural Corridors**

Lanes can be viewed as natural corridors.

### **Servicing Access**

If lanes are unpaved heavy service vehicles may break down the surfaces if not correctly constructed. Narrow lanes will be blocked when service vehicles are in them. Lanes therefore need two points of access.



## Utility

Utility trenches also have to be wide enough to ensure that when the equipment needs to be serviced one utility does not interfere with the other.

It is difficult to reduce the lane width to less than 20ft because all utilities compete now for space. For example, BCTel now has competitors who will require a corridor.

If transformers were placed in lanes there would also be potential safety concerns if areas were not provided to locate them in a place where vehicles cannot hit them. A 2m barrier may be required to protect them.

Servicing houses with Hydro from the lane creates access problems for meter readers. Coming in through the backyards is not always the best option. Electronic meters that can be remotely read may be required. The up front expense of automatic meter readers has to be considered.

Tree trimming can present an additional maintenance cost when services are above ground, indicating that underground service might be a cheaper alternative. Conflicting reports exist even within BC Hydro itself on the cost of underground vs. above ground wiring. If hydro goes underground so does telephone.

Service boxes would have to have manholes or something-heavy duty to protect them under impact.

## Lighting

Lighting is an issue in terms of night servicing. If the servicing trucks have to go into the lanes then either lights are brought in with the trucks or there are lights in the lane.

## Interconnected Street Network

### Transportation

The region and the whole planning area will have to be taken into consideration when determining transportation requirements. One issue is regional transportation services and the capacity of Fraser Highway. Plans exist to make Fraser Highway 6 lanes to service the area and meet anticipated future demand for through traffic. The Clayton area is outside the CMA, therefore it may not be serviced by BC Transit and an alternate service may be required. Transit reps suggest that GVTA is open to smaller scale transit options and that 13,000 persons may create sufficient demand to justify internal routing, particularly if the land use and street pattern is transit friendly.

Some road design elements, which would require performance standards/goals, are:

- the roadway width: what is the design scenario? queuing operation vs. two-way flow. What is the design vehicle size?
- Intersection corner radii - what is the design vehicle? can sweeping into opposing lanes be allowed?
- intersection angle - in what cases is 90 degrees required and when can it be relaxed?
- design speed for roads
- operating speed
- traffic volumes: what is appropriate for various street types?
- street type hierarchy: is there one?
- local road network layout: block lengths, connectivity
- parking lanes and width
- lighting: for traffic or for pedestrians, or for both?
- turning lanes: when required, if at all?
- cul-de-sac allowed in certain circumstances? If so design and radius
- driveway widths, grades, paired/shared
- traffic calming: when is it needed and how can it fit?

## **Traffic patterns that result in short cuts through rural areas could lead to conflicts between farm vehicles and commuter traffic.**

### **Transit**

The Fraser Highway is designated as a major transit corridor. Alternative approaches to local servicing in the Clayton area are being explored.

Transit considerations include: minimum road widths, stopping areas, bus storage, integration of pedestrian ways and land use planning with transportation planning, a transferring facility, and a bus interface. Guidelines exist, however, with alternative standards some adaptation will be required.

### **Narrower Streets**

#### **Water & Sanitary**

Middle alignment of mains may have to change as street widths are altered.

The narrow street presents difficulty for work crews at times when lines need to be worked on or replaced. The reduced width means there is a limited amount of room for crews and equipment pipe storage etc. and therefore streets will have to be closed to traffic. The “alternative” ROW width is actually no narrower than new City of Surrey standards.

#### **Utilities**

The biggest impediment to implementing alternative road standards is the installation of utilities, particularly when no lane is available to accommodate a portion of the utilities. The utility companies are examining how to service developments that use alternative road standards.

#### **Parking**

The limited research available on on-street parking demand versus land use form/density makes it difficult to predict parking demand and, therefore, the need for on street parking. Parking performance measures have to be set and due to the lack of research measures will have to be developed. The densities will impact on parking requirements.

Some suggest that in developments where a status quo street width has been used residents tend to park on the street. Where street widths have been narrowed they tend to park in the back lanes.

Depending on the grade it will take time for the gravel areas to settle to the point where the aggregate serves as an effective parking area. Early on gravel tends to migrate.

#### **Maintenance**

Road width is not an issue other than snow removal. Removal of snow during a couple of weeks a year must be considered. Surrey presently only plows arterials. No local roads or lanes are plowed.

#### **Postal Services**

Narrow streets may cause congestion when people stop to pick up their mail.

#### **Transformer**

Customers are not particularly fond of having transformer boxes in their front yards.

# PUBLIC SAFETY AND FIRE

Fire services can be adapted to alternate types of development as long as some fundamental requirements are met. Narrower streets can impede larger vehicles meeting their anticipated arrival time. The vehicles have to be maneuvered through the streets efficiently. The incidence of fire spreading from unit to unit increases with higher density. However, in an area with a definitive boundary it is easier to use alternative ways to meet both fire and medical demands. The relationship between density and response time needs to be examined. Additional points of access to the structure (i.e. lanes) can be helpful.

Preservation of Natural Environment

# INTEGRATE GREEN SPACES.

There is a need for those who influence the use of open spaces in the City to come together and integrate open space uses. For example parks and green infrastructure need to be amalgamated. Currently, the space required for detention ponds is an engineering concern and not a park issue. They should serve both a water detention function and parks function or multiple functions should be applied to open spaces.

The integration of open space functions could lower the costs and still meet the objectives for open spaces.

A challenge will be to integrate the characteristics of an “ideal” site for both parks and detention ponds.

## Level of Recreational Use

The level of recreational use that a corridor can withstand before it becomes a detriment will have to be considered.

# URBAN FORESTRY & VERTICAL LANDSCAPE ELEMENTS

Tree rooting volume is directly proportional to crown volume. It would be better to depict the actual canopy of trees in the drawings produced out of the charrette or planning process. The type and size of trees will dictate the materials used under infrastructure e.g. sidewalks in order to accommodate the principle rooting space achieve canopy volumes.

Space allowances for trees need to be large enough to accommodate a well-drained rooting space. Normally trees appearing in swales will produce a shallow root system and trees are lost during high wind events.

Conflicts exist with the present tree bylaw. For example: anything that is 200-250mm has to be marked for preservation, however, if the sub-surface structure is changed the trees will die. A better approach is to save them in the green spaces. There is a need to look at urban forestry as a function rather than just aesthetics. Plant the right trees in the right places.

The widths that are required to allow a tree to stand on its own are outlined in the planning department publications. Often there is not enough land to meet the standards.

There is also a relationship between tree location and property lines and the NCP should take that into consideration. The burden of preserving all the trees is often put on one family and ways must be found to distribute the responsibility.

At present there appears to be inconsistent policy on the planting of large trees to hide overhead hydro lines. Consistent policy is required.

## **Maintenance**

Change is required in the number of lots that allow trees to come right up to the lot line. When water no longer enters the area, the trees decline and then have to be removed. This adds a burden to maintenance.

## **Sensitive Areas**

Sensitive areas need to be identified, prioritized and special requirements set out for protection/ preservation. An environmental consultant may need to be hired to identify and assess them.

Use of alternative planning/zoning tools for protecting environmentally significant areas.

## **Natural Habitat**

Natural habitat protection has to be considered including wildlife and vegetation.

Methods to protect the forest blocks and/or old field habitat will have to be developed.

Incorporating forest blocks into the City's greenways could be an option.

## **Food**

When discussing the concept of sustainable development we should consider food production systems within the East Clayton area.

## **Telephone Utility**

Increased use of open spaces can require longer runs through the open spaces and back to the main stations. No customers will be on the lines in the open spaces. The result is increased maintenance and service costs which is reflected in the customer's monthly bills.

## **Natural Drainage Systems**

Consider any unique engineering requirements for the East Clayton area that may not apply to other areas.

Drainage Alternatives are needed to develop land. This concept of sustainable development offers an alternative that is being looked at in Washington State. Increased paving increase drainage problems and detention ponds are getting bigger and more problematic to locate.

The relationship between road gradient and its implications for a natural drainage system has to be considered.

Grass coming right up to the pavement could be problematic to the drainage system functioning properly. Gravel verges and other solutions for trapped water should be explored.

## **Surface Water Impact On Creeks**

In addition to groundwater, surface water's impact on creeks also has to be considered. The lack of a tree canopy is also an issue with regards to surface water.

The relationship between the uplands and lowlands with respect to drainage patterns and rates need to be factored in with the planning.

## **Soils**

The soils of the East Clayton area are clay type soils having limited filtration capacities. More information is required regarding the soils of the area. City Engineering will engage the services of Reid Crowthier to prepare soils information. When soils are disturbed water will run off in an entirely different manner than prior to disturbance.

## **Surface Water**

In the East Clayton area, the forested land already has a lot of surface water that needs to be dissipated. A surplus of water can provide a resource for irrigation of agricultural land. A retention system could hold water to meet agricultural demands.

## **Water Quality**

Would directing flow through public gardens could lead to water quality problems? If it were going on to soil areas would there be unacceptable levels of contaminants and bacteria?

## **Fire**

Fire is required to flush out its water systems on a periodic basis, consideration will have to be given to flushing at great water pressures and its impact on natural drainage systems.

There will have to be some care associated with the type of industry selected for the site and there will have to be stricter building requirements.

## **Building Character**

### **Smart Houses**

Addressing household water consumption patterns would take the notion of sustainability to a higher level. This could extend into an examination of eco-housing that might include water flow monitoring, the use of perforated pipes, energy conservation, and other innovative ideas.

### **Water Conservation**

Home water conservation could be something to explore.

### **Energy Use**

Consider energy use within buildings for space and water heating.

### **Basements**

Houses with inhabited basements will mean that sanitary piping will have to be placed at a significant depth.

### **Outdoor Space**

People like to have private outdoor space. How can this be done and still maintain the density targets?

## **Design/Construction**

### **Urban Forestry**

The presence of mature trees and the implications of their removal during the construction stage will have to be considered. Disturbance of the soils during excavation can result in the trees dying.

Builders need education on what to protect and why. Currently development clears everything away. Typically all of the topsoil is stripped away leaving behind compacted clay soils that are impervious, negatively affecting the efficiency of the drainage system.

### **Landscaping**

Landscaping is a key issue when trying to make this development attractive to the consumer.

Up front landscaping costs to bring the neighborhood to an acceptable level aesthetically will be greater.

Wooden fences in back lanes can be unsafe as they blind views from the lanes and accessing the lane from driveways. This also applies to front yard driveways.

### **Fire/Public Safety**

Fire needs to know building styles, rooflines, setbacks etc. before they can completely and knowledgeably address the issue of alternative standards.

The need for new fire halls or expansion to existing fire halls will need to be addressed which also relates back to the buildings and what fire protection systems are used e.g. sprinkler systems.

## Postal Services

The normal practice is to identify the specific number of units that will need to receive postal services and then design the appropriate customer delivery system. Therefore, planning for the number of customers' needs to be done at the time of subdivision. Working with the builder to determine the number of customers and siting the customer delivery boxes is the most effective way. At present, convenience of access to the delivery boxes, including distance and places where people pass by on the way home are site location factors.

## Prototypes

Prototypes can guide actual developments under the sustainable development principles.

## Maintenance

Attention must be paid to site excavation and construction stages in terms of such things as soil composition and ensuring appropriate filtration rates are maintained in the soils. Builders need education on what to protect and why. Currently development clears everything away.

## Maintenance

It is important to develop cheaper ways to operate the whole system. This cost reduction would benefit the City and taxpayers.

## Gravel Use

Citizens of the city will often complain about gravel on street verges and lanes. Maintenance with sealers to control dust will reduce permeability. Other options such a porous pavement and other aggregates should be investigated. Any aggregate used should be conditional on cost and ease of maintenance. The Vancouver experiences with gravel lanes and street verges should be determined. The concern is that owners of properties in the alternative developments will want to pave lanes, which will affect the natural drainage system. Education and deed restrictions are required.

## Grass

Regular cutting of grass in deeper ditches with standing water is unnecessary. The City should just let the grass grow so it can slow down the water.

## Urban Forestry

Surrey has a young forest and the City is soon going to have to handle the costs associated with replacing hard landscaping as the trees and concrete compete for the same space. Softer infrastructure and more generous space for trees is suggested.

## Maintenance Budget

Maintaining an appropriate maintenance budget for alternative type developments is essential. Currently Surrey uses a "gold plated" standard in the hopes that maintenance can be deferred indefinitely.

## Swales

There are cases where developments using swales took about two to three years before they worked properly. This means a longer maintenance period for the developer because they have to correct the problems that arise.

## Liability

Liability issues related to drainage system failure will have to be identified and taken into account.

From a servicing perspective there are liability issues and servicing requirement that need to be considered. It would be best to address these early on in the process so that people will know what to expect from the alternative servicing methods.

Ways to address potential liability issues will need to be identified if an integrated approach between City Depart-

ments and agencies, the school district, parks and engineering.

Vegetation management liability issues also have to be considered

## **Marketing**

In general, a development like the sustainable alternative is marketable, however there are challenges that will need to be met. There is consumer's willingness to accept a new style and the maintenance of a comparative cost advantage.

Projects that are modeled after communities like Kitsilano are very popular with the consumer. They like the fact that they can walk and that their kids will be in a safe neighbourhood. With this type of development you are offering a quality lifestyle.

It is difficult, however, to transfer the sense of community that is associated with a place like Kitsilano into a new development. Developments on the scale of East Clayton, were they consistent, could possibly be successful in this regard.

With new developments the term affordable housing is often viewed as a form of low cost social housing. You can talk about affordability but you cannot market it as affordable housing. Additional units can help to ease mortgage payments because they can be rented out.

Caution is required on overselling the cost reductions because the savings could evaporate in unanticipated site development costs.

One issue for the consumer will be the delay in maturing neighborhood green spaces and natural drainage areas. A challenge will be to determine how to sell the lots during the development stages—linear or random lot sales. Gravel will have to be installed after the units are finished which is a potential marketing problem. Alternative approaches will have to be examined.

A challenge will be how to make the units fee simple. The block strata are not the way to go. Legal costs associated with strata corporations would be an impediment.

## **Consumer Education**

Public opinions on roadside swales and puddles have to be taken into account. Increased public awareness and stewardship could lead to innovative and alternative approaches to corridor protection which might include the use of and methods of protecting riparian zones.

With respect to building energy use, the demonstration project should include consumer education on the benefits of energy efficient construction and provide incentives for builders to construct energy efficient and durable buildings.

It is hard to sell reducing car dependency in “a little community in the boonies”. East Clayton is not a downtown urban centre, at least not yet.

There is a need to educate the consumer so they understand the principles behind the sustainable community and can work to maintain it over the long term. In some cases, residents feel like second class citizens without curbs and paving. They also have been known to fill in swales and prevent on street parking. Dust is an on-going issue and the current tolerance level is very low. Long term maintenance means ensuring those second and third generation buyers do not want to revert back to status quo developments.

A challenge will be to prevent 2<sup>nd</sup> and 3<sup>rd</sup> generation buyers from demanding status quo infrastructure like removal of the gravel areas, installation of curbing etc. A consumer education program will be required to increase understanding of the sustainable neighbourhood and that is based on a natural drainage system linked to other features. They will need to know what to expect from the neighbourhood and how the sustainable system works and its life style benefits. People tend to want perfect drainage but need to be educated on drainage water as a resource and its link to stream water quality and saving the salmon.

## Monitoring

### Streams

It is important to measure pre and post development stream flows.  
An inventory is required of what information and data already exists.

When implementing alternative approaches we should document our goals and determine the extent to which we achieve them. This requires monitoring, which should start now so we can establish a baseline. The requirements for monitoring can be determined by working back from the objectives. We should set up a program to monitor and explore the possibility of using DCC money and other sources for collecting drainage data.

An assessment on the productivity of the streams and knowledge of existing physical inventories and soil inventories are necessary.

### Greenhouse Gas Reduction

Lay the groundwork now to allow for the monitoring of all energy uses and the associated reduction in Greenhouse Gas emissions and improved air quality both within the community and within its buildings.

### Municipal Planning

#### *An Integrated Approach*

The role of the landowners is essential since they have a vested interest. However, they are not always the ones that are going to have to live with the decisions.

NCP process requires accountability and to build trust.

The process must be expedited.

An integrated approach will require increased communication and interaction, which will require greater investment of senior management's time in order to obtain policy acceptance.

Integration between transit planning and land use planning in order to address issues of access and safety is required. Ideally, the transit plan would be developed concurrently with the NCP.

### Policy

In order to implement the sustainable development principles and the associated performance standards, municipal officials and other decision-makers at all levels will have to buy-in.

Policy adjustments at a senior level will require the involvement and buy-in of senior level decision-makers.

In a similar way if these developments are to have overhead power lines in back lanes a joint policy needs to be worked out between BC Hydro and the City.

The plan policy and regulatory system must provide some confidence in those who invest in properties that future developments will fall within the performance standards set under the plan and regulation/bylaw.

### Planning System

A challenge is to establish a more flexible municipal planning system to accommodate sustainable development proposals. The problem will not be in finding someone to build it but overcoming the specific requirements of planning and zoning bylaws that tend to be inflexible.

It may not be possible to incorporate all seven principles at first; however, we can work towards achieving the principles with each new development in the East Clayton area moving closer to meeting the principles as successes are experienced. Flexibility in the planning system to allow innovation is key.



## **Regulatory/Bylaw**

The proposed development principles, from an environmental perspective, look sound. However, there are existing regulatory requirements that will need to be identified and addressed in order to implement the principles.

Municipalities can control a lot through zoning, they have the authority so they should use it.

City by-laws currently prohibit a lot of things that are being suggested. Each of these by laws will need to be examined.

Flexibility needs to be built into the NCP that will allow adjustments to such things as market conditions. We need to understand the implications of such flexibility for the future built environment. For example, if developers and builders are required to designate specific number of units at the NCP level then we will not be able to easily respond to market changes.

The success of sustainable developments will largely depend on the flexibility in innovation permitted to allow innovate building design and character. Therefore, any development permit system should provide the flexibility necessary to achieve innovative designs in housing character. OCP's have a tendency to get out of date and the plan policy does not keep up with the market place.

## **Fees & Levies**

Smaller housing units have to be placed on the market at a lower value than larger units, so densities have to increase. Fees and levies charged for residential densities discourage the builder to construct smaller units. An alternative formula is required to make smaller units more attractive.

In traditional developments, like Kitsilano, single family houses were converted into duplexes. With a new development you now have disclosures to file on each unit. Consequently, there are legal costs the consumer must consider when buying a new home within a multiple unit building.

The present application of DCC's to secondary suites within areas designated for secondary suites make them impractical. A workable approach is to adopt the levy charged on secondary suites created after original construction, 2-3 years later, when a suite fee is charged.

## **City Council**

City council is not just a part of the process but ultimately is responsible for adopting any policies and standards.

As the process unfolds, effective communication to City Council and senior management on the planning process proposed policy and standard changes are required.

## **Maintaining Integration**

Integrating the various functions to achieve the objectives for sustainability require those functions to remain integrated over time. In the face of differing mandates a way needs to be found if we want to maintain concepts like integrated green infrastructure or a continuous park system.

## **Life cycle Costs**

An analysis of projected lifecycle costs for alternative developments will be required before the NCP goes to City Council. Replacement costs, however distant they are into the future, should be factored into this analysis.

## **Contingency**

A back up plan might be a good idea because we are trying new concepts. The question of whether or not DCC's can be put aside for the implementation of a contingency plan to help upgrade should be explored.

## **Demonstration**

When considering the actual size of the development site for demonstration we must consider what benefits there

will be to the environmental system. The post development hydrology system needs to mimic what existed prior to development. We need to be innovative and try a drainage system with no pipes and determine the costs. Demonstrate that an alternative approach can work and then it can be taken to other municipalities.

## ***Appendix 2***

### ***Matters Arising out of East Clayton NCP Constituency Workshops that will Significantly Impact on the Implementation and Longevity of Alternative Sustainable Developments***

Some of the following matters will be addressed during the afternoon session of Day 2 of the design charrettes. Constituency members will join a number of working sessions that will develop parameters and actions required moving these matters forward. Under each matter is a list of suggested working session participants others interested in joining the working sessions are welcome. Stream Monitoring and Green Infrastructure working sessions are now underway.

#### **PRE-CHARRETTE**

##### **1. Stream Monitoring Program**

A program is required to monitor stream and water quality improvements in the East Clayton NCP area. (Status: Workgroup in progress)

Working sessions include:

- . Fisheries & Oceans
- . Ministry of Environment, Lands and Parks
- . City Engineering – Eric Emery, Carrie Baron
- . Surrey Environmental Advisory Committee

##### **2. Integrating Green Infrastructure**

Current practices establish open spaces that perform separate purposes to achieve different objectives. Ways need to be explored as to how these areas can be linked and integrated into one system to achieve maximum value from a drainage perspective, habitat protection, schools, parks and recreation. (Work in Progress)

Working sessions include:

- . City Engineering and Operations
- . City Planning
- . City Parks and Recreation
- . School District
- . Fisheries and Oceans
- . Ministry of Environment, Lands and Parks

#### **PRE AND POST CHARRETTE**

##### **3. East Clayton**

Some of the matters that are specific to the East Clayton Area include: the fragmented ownership issues, issues related to development and equity, phasing in development as servicing becomes available, owner expectations and awareness, owner and developer commitments, plan implementation, parking standards and zoning. Zoning matters include exploring concepts for live/work and office park areas that integrate office, lunch area, residential, recreational and natural zone functions.

Working sessions might include:

- . East Clayton Advisory Committee
- . City Planning

- City Engineering
- Developers
- Real Estate

#### 4. Life Cycle Costs of Green Infrastructure

An analysis of projected lifecycle costs for alternative developments will be required before the NCP goes to City Council. Replacement costs, however distant they are into the future, should be factored into this analysis.

Working sessions might include:

- City of Surrey Engineering and Planning
- Canada Mortgage and Housing Corporation
- Ministry of Municipal Affairs
- Urban Development Institute
- GVRD

#### 5. Monitoring Greenhouse Gas Reductions

Develop and implement a monitoring system for measuring greenhouse gas emissions.

Working sessions might include:

- BC Hydro
- Canada Mortgage and Housing Corporation
- Environment Canada
- BC Transit/GVTA
- GVRD
- Ministry of Environment, Lands and Parks
- City of Surrey Engineering and Planning
- East Clayton Advisory Committee

#### 6. On-site Construction

The capacity for natural drainage systems to work efficiently will largely depend on performance at the construction stage and the applications of best practices by the contractors and builders. For example, after soils have been disturbed during the construction period mimicking soil infiltration rates is difficult to accomplish and therefore will require care during the construction phase to reach infiltration rates necessary to maintain an effective natural drainage system. What are best practices and what must be done to ensure they are practiced?

Working sessions might include:

- City Engineering (Drainage)
- City Planning, Building & Development
- Legal
- Developers/Builders
- Ministry of Environment, Lands and Parks
- East Clayton Advisory Committee

### POST-CHARRETTE

#### 7. Maintaining the Sustainable Development Standards over the long term.

In cases where alternative approaches i.e. natural systems, gravel verges, etc. have been used residents have later demanded conventional infrastructure i.e. pipes and curbs be installed at a higher cost. These concerns need to be resolved. City Operations identified developments that have incorporated some of the features of the sustainable development principles in the City. A review of what happened in the case of Amble Green development (16<sup>th</sup> Ave and 132<sup>nd</sup> street) should be conducted. Areas of work include: a consumer education program, legal instruments, agreements, institutional organizations, review of existing experience and liability

Working sessions might include:

- Developer/Builder
- Engineering and Operations
- Planning
- Legal
- Environment Canada
- Ministry of Environment, Land and Parks
- Canada Mortgage and Housing
- East Clayton Advisor Committee

## 8. Building Design and Use

Buildings that are constructed in a sustainable community should enhance sustainable community objectives. Explore ways that building design and use incorporate energy efficiencies, water consumption and healthy-flex housing principles. Explore the implications for local building codes.

Working sessions might include:

- City Urban Design
- BC Hydro
- Developer/Builder
- Canada Mortgage and Housing
- Real Estate
- East Clayton Advisory Committee

## 9. Regulatory System

The Developer Industry suggests that in order to implement alternative standards an appropriate regulatory system-by-laws, application requirements, information requirements, and day to day approval and review systems will need to be in place to accommodate the alternative development approaches. With City planners, the Developers want to explore areas where flexibility is necessary in the system and whether or not it is possible.

Working sessions might include:

- Developers/Builders
- City Planning: approval officers and front line planners

- <sup>1</sup> CORE pgs. 14 - 18; MA 942.11; CS pg. 10, 28.
- <sup>2</sup> MA 942.11(II); LRS pg. 43; CORE pg. 14, 17.
- <sup>3</sup> CORE pg. 18; CS pgs. 10, 13.
- <sup>4</sup> LRS pg. 45; CS pg. 31; CORE pg. 15; MA 942.11; BCEC App. pg. 1; CS pgs. 8, 2.
- <sup>5</sup> MA 942.11 (h), 945; CORE pg. 15.
- <sup>6</sup> CORE pg. 14; BCT pg. 13; CS pg. 19.
- <sup>7</sup> Clayton Neighbourhood Concept Plan: General Land Use Concept
- <sup>8</sup> LRS pg. 44; CV pg. 46; BCH pg. 47; BCT pg. 10; BCEC App. pg. 1.
- <sup>9</sup> CORE pg. 14; LRS pg. 44; MA 942.11 (b); BCT pg. 6, 11; CV pg. 46; CS pg. 16, 31; BCH pg. 47; BCT pg. 6.
- <sup>10</sup> **BC Hydro/Criterion Study.**
- <sup>11</sup> BCH pg. 46; MA 942.11 (m); CORE pg. 14, 16; BCEC App. pg. 2.
- <sup>12</sup> BCH pg. 46; BCEC App. pg. 2; CORE pg. 17; MA 942.11 (m).
- <sup>13</sup> BCEC App. pg. 5; BCH pg. 17; MA 942.11 (m).
- <sup>14</sup> BCH pg. 46; CORE pg. 16.
- <sup>15</sup> MA 942.11 (b); CORE pgs. 14, 16; LRS pgs. 43, 44; BCT pg. 3; BCEC App. pg. 2; CV pgs. 36, 46.
- <sup>16</sup> LRS pg. 43; CORE pg. 16; CV pgs. 34, 46; BCEC App. pg. 3; MA 942.11 (b), BCT pg. 13; CS pg. 16.
- <sup>17</sup> Minimum and maximum population, total dwelling units, and gross density figures are derived from a variety of sources that suggest eight dwelling units per acre is the minimum density at which a good range of commercial services can be economi-