

6. ANALYSIS OF ALTERNATIVES

6.1 Integrated Land Use and Transportation Planning Approach

In 2003, the City of Hamilton initiated the Growth Related Integrated Development Strategy study, known as GRIDS. The GRIDS Study Design explains that “GRIDS is a planning process to identify a broad land use structure, associated infrastructure, economic development strategy and financial implications for the growth options to serve Hamilton for the next 30 years”. GRIDS is an integrated planning process because all of the activities related to development have been brought together to enable a coordinated, time and cost efficient investment strategy for the public and private sectors.

There were essentially three steps in the GRIDS process as discussed further in the Final Growth Report⁶.

- 1) Development and evaluation of growth concepts;
- 2) Development and evaluation of growth options; and,
- 3) Refinement of the preferred growth option.

Transportation infrastructure requirements, costs and impacts associated with growth were considered in all stages of the GRIDS process.

6.2 Analysis of Growth Alternatives

In stage 2 of the GRIDS process listed above, five options were initially considered to accommodate future growth:

- Option 1: No Residential Expansion;
- Options 2 to 4: Appropriately Distributed Development (three different options);
- Option 5: Nodes and Corridors.

All options reflected the requirements of Places to Grow and the Greenbelt legislation, including the target of accommodating 40% of all new households within the existing urban area through intensification.

The growth concepts and growth options were evaluated using a Triple Bottom Line (TBL) evaluation. TBL is a structured methodology for integrated analysis, evaluating how each growth concept will lead toward or away from the desired social, economic and environmental results identified in *Vision 2020* and the *Nine Directions*.

Specific criteria related to transportation were identified and assessed as part of the TBL approach, including:

- Community Well-Being
 - Potential For Disruption To Communities From Transportation Activities

⁶ Growth Related Development Strategy: Growth Report, City of Hamilton and Dillon Consulting, May 2006.

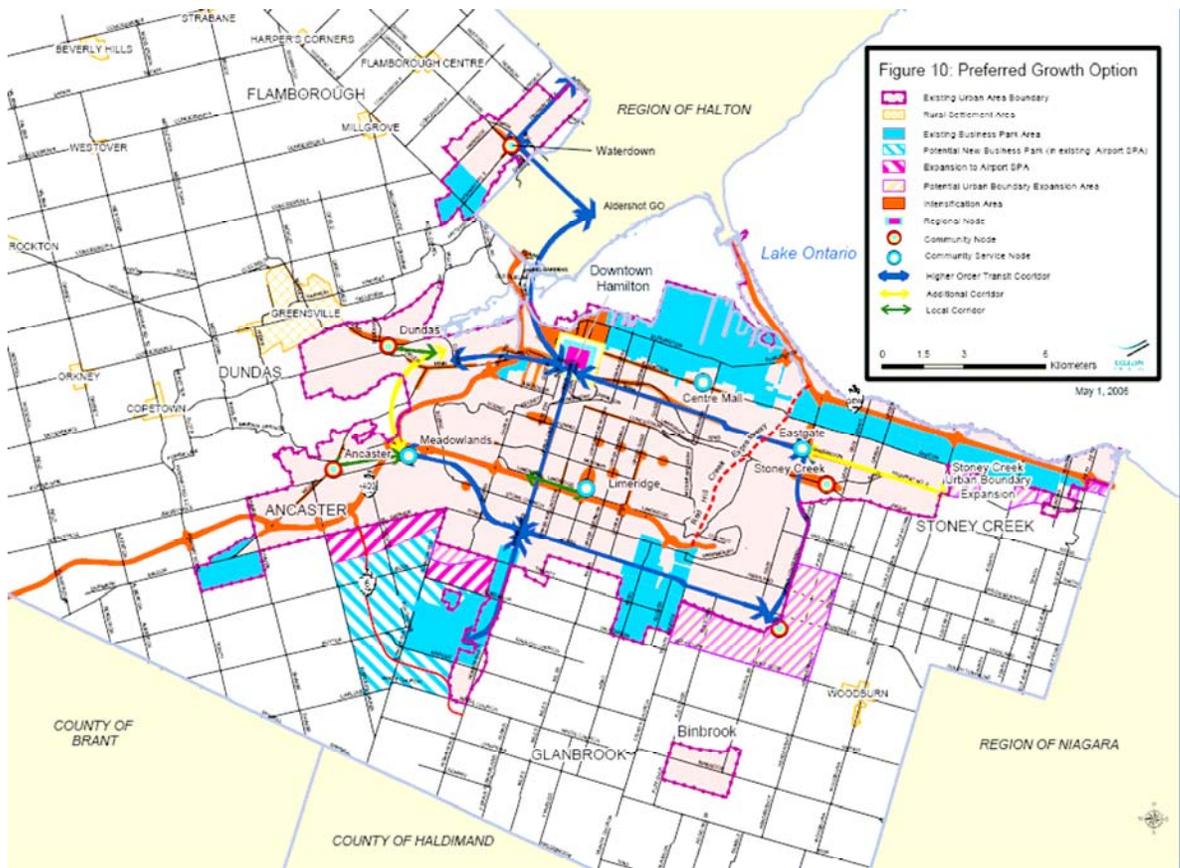
- Economic Well-Being
 - Ability To Use Existing Transportation Infrastructure
 - Impact On Accessibility For Goods Movement
 - Transportation Infrastructure Requirements And Level Of Service
- Ecological Well-Being
 - Ecological Impact Of Infrastructure
 - Estimated Change In Fuel Consumption
 - Proximity Of Residents To Transit
 - Degree Of Support For Transit
- Other Considerations
 - Potential Risks Of Not Achieving Options

From a transportation perspective, Option 1 (No Expansion) and Option 5 (Nodes and Corridors) were considered most preferred as they had the highest concentration of development in areas with the highest transit potential. For example, trips originating in the Downtown and Central Area currently display a transit mode split that is more than double the City-wide average. While both Option 1 and Option 5 were generally the most supportive of transit, Option 5 was considered to have a higher potential for transit in that it concentrates development around nodes and corridors where there is already high transit service levels (e.g. Downtown, McMaster, Eastgate Mall) or where transit services could be designed to operate efficiently and cost-effectively.

Options 1 and 5 also were determined to have the greatest potential to minimize auto travel demands across the Escarpment, thus minimizing the need for new Escarpment crossings.

Based on an extensive evaluation process involving multiple stakeholders from different disciplines, the nodes and corridors option (Option 5) was selected as the preferred option. This growth option, shown in Exhibit 6.1, is based on directing growth to an interconnected system of nodes (central foci of community activity) and corridors (mixed use, transit friendly linkages).

Exhibit 6.1: Final GRIDS Growth Option



Source: Growth Related Integrated Development Strategy, City of Hamilton, May 2006

6.3 Strategic Transportation Alternatives

6.3.1 IDENTIFICATION OF ALTERNATIVES

The consideration of functionally different solutions or “alternatives” is an essential part of the EA process. In parallel with the evaluation of growth options, several broad strategies were examined in terms of their potential to address the City’s transportation needs while respecting the principles of GRIDS and VISION 2020. These included:

- **Status Quo** - No major changes to the road, transit or active transportation networks.
- **Committed Projects Only** - Projects already underway or identified in the 10 year capital plan.
- **Modest Transit Expansion** - Increases in existing bus services, expansion of bus routes to new areas, increased GO Transit Service.
- **Aggressive Transit Expansion** - Implementation of Bus Rapid Transit System in key corridors, policies to encourage more compact, mixed use development in transit corridors, transit to major employment areas, new GO Rail lines.

- **Demand Management Options** - Aggressive programs to encourage walking, cycling, ride-sharing, telecommuting, etc.
- **Roadway Capacity Optimization** - Localized intersection improvements, access control along major corridors (i.e. improved signal coordination, turn restrictions).
- **Roadway Capacity Expansion** - Selected road widenings, where justified based on demand, new arterial or collector roads to serve new developments, potential freeway expansion.

6.3.2 EVALUATION OF ALTERNATIVES AND PREFERRED TRANSPORTATION SOLUTION

Each of the strategic transportation alternatives were evaluated based on four broad categories. The evaluation was largely based on a subjective evaluation, drawing on the technical studies and modelling, as well as the concurrent analysis undertaken to assess the GRIDS options. Considerations under each of the four categories, or factors, are listed below.

- Natural Environment Factors
 - Reduces criteria air contaminants
 - Minimizes noise impacts
 - Improves water quality, green spaces, flora and fauna, etc.
- Socio-cultural Factors
 - Improves quality of life in neighbourhoods
 - Reduces collisions; improves personal safety and security
 - Improves mode choice
- Economic Factors
 - Attracts employment, capital, optimal use of transportation infrastructure capacity, and future land use
 - Increases land value, or does not decrease land values
 - Reduces or defers public and private costs of transportation capital (construction or acquisition of fixed infrastructure and rolling stock) and operations (maintenance, enforcement, delay, fuel, etc.)
 - Maintains traffic flow at acceptable level
- Technical Factors
 - Ease of implementation
 - Minimizes operational impacts

Exhibit 6.2 provides a summary of the evaluation of strategic transportation alternatives and the key considerations. Although no single approach is likely to solve all transportation problems, the preferred overall strategy is to rely on **transit** and **travel demand management**, in combination with **road capacity optimization** to solve transportation problems, before looking to road expansion. It is also recognized that adequate road infrastructure is essential for economic development and that strategies must reflect a balanced transportation network. Specific strategies also vary by individual location as discussed in the next section.

Exhibit 6.2: Evaluation of Strategic Transportation Alternatives

EVALUATION CRITERIA	Status Quo	Committed Projects Only	Modest Transit Expansion	Aggressive Transit Expansion	Travel Demand Management (TDM) Options	Roadway Capacity Optimization	Roadway Capacity Expansion
DESCRIPTION	- No major changes to the road, transit or active transit networks	- Projects already underway or identified in the 10 year capital plan	- Increases in existing bus services - Expansion of bus routes to new areas - Increased GO Transit Service	- Implementation of Bus Rapid Transit in key corridors - Policies to encourage more compact, mixed use development in transit corridors - Expanded transit service area - New GO Rail services	- Aggressive programs to encourage walking, cycling, ride-sharing, and telecommuting	- Localized intersection improvements - Access control along major corridors (i.e. improved signal coordination, turn restrictions)	- Selected road widenings - New arterial or collector roads to serve new developments - Potential Parkway expansion
NATURAL ENVIRONMENT FACTORS	- No impacts due to construction - Increase in congestion related air emissions	- Localized impacts due to road widening/extensions	- Will not achieve Vision 2020 targets for transit mode shares and air quality	- Most effective at reducing air quality - Can off-set need for new Escarpment crossings and other road widenings	- If successful air emissions will be reduced - Typically does not require new infrastructure	- Defers road widening - Can reduce localized congestion and air quality	- Road widenings could impact water crossings, Escarpment and other natural features - May increase vehicle use and related air emissions
SOCIO-CULTURAL FACTORS	- Would result in constrained social activities	- Current committed projects will not significantly improve transportation choices	- Improves transportation choice and access to transit for more of the population	- Helps to promote more sustainable, safe and integrated communities	- Requires behavioral change and may be seen as constraining mobility and freedom	- Few impacts on travel	- Promotes auto-oriented lifestyles and related problems such as obesity, health problems
ECONOMIC FACTORS	- Delays due to congestion - Likely to "close door" on new development	- Committed projects can be accommodated within planned budget - Committed works do not account for new employment lands	- Modest increases can be achieved with available funds (i.e. gas taxes) - Improves transit to employment lands	- Will require funding from senior governments	- Measures involving disincentives may affect businesses, residents	- Travel time savings and other benefits usually outweigh costs - Some technological solutions have on-going operating costs	- Cost of new Escarpment crossings is significant - Will reduce travel time delay and improve access for goods movement
TECHNICAL FACTORS	- Operational problems would increase	- Committed projects are all technically feasible	- No major impediments	- Restricted roadway widths limits ability to implement dedicated transit lanes	- Requires extensive human resources - Uptake of programs has been low to date	- Existing traffic systems will require major upgrade	- Many corridors cannot be widened - Property acquisition is difficult and time consuming
OVERALL ASSESSMENT							

LEGEND:

