5.0 ALTERNATIVES AND EVALUATION

This section summarizes the process followed for the assessment and evaluation of alternatives for the improvements to Highway 17. The assessment and evaluation of planning and preliminary design alternatives consisted of the following steps:

- Identification of the transportation needs and opportunities within the study area (see Section 3.0);
- Assessment of planning alternatives to establish an approach most appropriate to address the overall need;
- Identification of factors and sub-factors (criteria) to be used in evaluating the alternatives;
- Assessment and evaluation of corridor alternatives, and determination of a short list of corridors;
- Development of realignment alternatives;
- Assessment and evaluation of realignment alternatives;
- Assessment and evaluation of interchange / service road alternatives; and
- Establishment of an overall preferred plan.

5.1 Planning Alternatives

The MTO Class EA process requires that planning alternatives (or alternatives to the undertaking) be considered to ensure that there is reasonable and adequate justification to proceed with any improvements and that the need for the project is clearly demonstrated. The alternatives are assessed against their ability to reasonably address the identified transportation needs and opportunities, which are documented in Section 3.0.

The planning alternatives that were considered to address the identified transportation needs for Highway 17 within the study area were:

a. Do Nothing
b. Transportation Demand Management (reduce peak demand)
c. New and/or Improved Non-roadway Solutions (rail, transit and water-based)
d. Improvements to other Roadways
e. Improve / Expand Existing Highway 17
f. Provide a New Highway 17 Realignment

Exhibit 5-1 shows the advantages and disadvantages of each of the planning alternatives, and the following subsections provide further rationale for either carrying forward or setting aside the planning alternatives.

a. Do Nothing

Do nothing usually means to maintain the status quo of transportation infrastructure and services, with no significant changes or actions being taken to manage demand, expand infrastructure, or improve operations.

Doing nothing to improve the transportation system and capacity will not realize the study objective and will have severe impacts on movement of people and goods:

- Increased costs for the delivery of goods and services;
- Negative economic impact on tourism, industry and community quality of life;
- Negative environmental effects through increased fuel consumption and emissions;
- Increased driver delay and stress;
- Effectively constrains employment and economic growth in the study area; and
- Does not provide the opportunity to enhance highway safety.

Since it is expected that traffic demands are likely to grow in the future and congestion will continue to worsen, the highway is not expected to function well as a strategic link and road safety is anticipated to deteriorate. As a result of this potential, the Do Nothing alternative does not reasonably resolve the anticipated future transportation problems in the study area, nor does it allow MTO to take advantage of improvement opportunities.

The Do Nothing alternative, however, was carried to the evaluation as a baseline for comparison to other alternatives.

b. Transportation Demand Management

Managing transportation demand includes the implementation of measures to sufficiently reduce, shift, or eliminate transportation demand, such that improved transportation infrastructure/operations within the study area are not required.

Several ways that transportation demand can be managed include:

- Spreading peak period demand over longer periods (i.e. through encouragement of staggered work hours or goods delivery);
- Shifting existing and future transportation origin/destination patterns to areas where fewer transportation infrastructure and operation problems exist, and/or where better transportation opportunities exist (i.e. encouraging development in target areas);
- Eliminating any increase in transportation demand (i.e. through caps on development);
- Directly managing the use of the existing transportation system so as to maintain demand at a level balanced with capacity (i.e. through metered access); and
- Reducing vehicular demand by using fewer vehicles to carry the same amount (or more) of people and goods (i.e. encouraging High Occupancy Vehicle use and/or discouraging one-occupant vehicle use; promoting regional mass transit – bus and rail).
## CRITERIA

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>DO NOTHING</th>
<th>Transportation Demand Management (Reduce Peak Demand)</th>
<th>New and/or Improved Non Roadway Solutions (Rail, Transit, Water Based)</th>
<th>Improvements to other Roadways</th>
<th>Improve / Expand Existing Highway 17</th>
<th>Provide a New Highway 17 Realignment</th>
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</thead>
<tbody>
<tr>
<td><strong>LONG TERM NEEDS</strong></td>
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<tr>
<td>Congestion Decreased</td>
<td>Congestion will increase as traffic volumes increase over long term</td>
<td>Congestion will not decrease significantly</td>
<td>May result in small decrease in congestion over short term as alternates modes are used</td>
<td>Congestion will increase as traffic volumes increase</td>
<td>Congestion reduced with significant capacity improvements</td>
<td>Congestion reduced with significant capacity improvements</td>
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<tr>
<td>Road Safety Improved</td>
<td>Potential for collisions will increase as traffic volumes increase</td>
<td>Safety will not improve</td>
<td>Will not improve safety in existing highway corridor</td>
<td>Minor safety improvements</td>
<td>Safety improved with design / capacity changes</td>
<td>Safety improved with design / capacity changes</td>
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<td>Serve Local Needs</td>
<td>Will not service local needs due to higher congestion</td>
<td>Will not service local needs due to higher congestion</td>
<td>Will not service local needs due to higher congestion</td>
<td>Will serve local needs. Access changes may be required</td>
<td>Will serve local needs. Access changes may be required</td>
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<tr>
<td>Staging</td>
<td>Not applicable</td>
<td>Can be staged</td>
<td>Cannot be effectively staged</td>
<td>Can be staged</td>
<td>Can be staged</td>
<td>Can be staged</td>
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<tr>
<td><strong>MINIMIZE IMPACT</strong></td>
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<tr>
<td>Minimize Economic Impact</td>
<td>Economic potential may be limited with existing highway</td>
<td>Shifting travel patterns may cause economic impact</td>
<td>Minimal impact on highway businesses. Does not support area tourism focus</td>
<td>Economic potential may be limited with existing highway</td>
<td>Increased area access is a positive impact however potential change to local business access</td>
<td>Increased area access is a positive impact however potential change to local business access</td>
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<tr>
<td>Minimize Natural Environmental Impact</td>
<td>No impact</td>
<td>Minimal impact</td>
<td>Minimal impact if existing corridors used</td>
<td>Minimal impact</td>
<td>Some impacts, most of which can be mitigated</td>
<td>Some impacts, most of which can be mitigated</td>
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<tr>
<td>Minimize Socio/Cultural Effects</td>
<td>Minimal impact</td>
<td>High Impact Potential (ie. Staggered work hours / caps on development)</td>
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<td>Minimal impact</td>
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<td>Some impacts, most of which can be mitigated</td>
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<tr>
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<tr>
<td>Existing Highway Available</td>
<td>The existing highway is available</td>
<td>The existing highway is available</td>
<td>Existing rail corridor and existing highway, air and marine corridors are available</td>
<td>The existing highway corridor is improved/expanded</td>
<td>The existing highway is available</td>
<td>The existing highway is available</td>
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<td>Required Different Modes</td>
<td>Possible modes include cars, trucks and buses</td>
<td>Possible modes include cars, trucks and buses</td>
<td>Requires other modes to access rail/marine/air facilities</td>
<td>Possible modes include cars, trucks and buses</td>
<td>Possible modes include cars, trucks and buses</td>
<td>Possible modes include cars, trucks and buses</td>
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<tr>
<td>Cost Effective</td>
<td>The most cost effective solution considering capital cost</td>
<td>The most cost effective solution considering capital cost</td>
<td>Not cost effective since significant additional infrastructure required to achieve local access</td>
<td>A cost effective solution considering capital cost</td>
<td>More costly solution. Economic benefits to the area and improved highway safety and operation offset capital costs</td>
<td>More costly solution. Economic benefits to the area and improved highway safety and operation offset capital costs</td>
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<tr>
<td><strong>COMMENTS</strong></td>
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<td>Will not meet the area’s future needs. Minimal impact. Consistent with existing systems</td>
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<td>Will not meet the area’s future needs. Potential impact on development. Consistent with existing systems</td>
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<td>Will not meet the area’s future needs. Not consistent with existing systems. Does not adequately address long term needs as highways are the major means of transportation</td>
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<td>Will not meet the area’s future needs. Minimal impacts. Consistent with existing systems</td>
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<td>Will meet the area’s future needs. Some impact anticipated. Consistent with existing systems</td>
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<td>Will meet the area’s future needs. Some impact anticipated. Consistent with existing systems</td>
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<td><strong>RECOMMENDATION</strong></td>
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<td>Carry forward as a baseline for comparison</td>
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<td>Eliminate from further consideration</td>
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<td>Carry forward for further analysis</td>
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G.W.P. 5105-09-00  
HIGHWAY 17 PLANNING STUDY  
from Highway 11 South Junction Easterly to 2.7 km East of Highway 531  
Planning, Preliminary Design and Class Environmental Assessment Study  
PLANNING ALTERNATIVES  
EXHIBIT 5-1
Transportation demand is a product of provincial, regional and municipal development policies. Development areas inherently create traffic demand based on the need to travel through, within and between such areas. MTO’s mandate is to provide for the effective use of provincial transportation facilities to address the needs of the regional, provincial and Trans-Canada traffic.

For the purposes of this study, managing transportation demand is not a reasonable and practical alternative to the undertaking. The Provincial Government has deemed existing Highway 17 as an economically important corridor for the transportation of people and goods. As such, characteristics of demand management as indicated above are contradictory to the role and function of Highway 17. Also, the existing traffic patterns do not have “peaks” except Friday afternoon and Sunday afternoon during warm weather months, which coincide with recreational traffic that typically has a wide variety of origins and destinations. Transportation Demand Management is more applicable to commuter traffic with more defined Origin/Destination patterns versus Highway 17 traffic that is typically comprised of local, recreational and commercial traffic.

Therefore, transportation demand management as an alternative to the undertaking was set aside from further consideration.

c. New and/or Improved Non Roadway (Rail, Transit and Water-based)

Transportation facilities or mode types may be improved or introduced to expand the capacity of the transportation system, offer a new choice to the user, and contribute to the resolution of the stated problems/ opportunities. Non-roadway solutions would be air, rail, or water-based, requiring the associated infrastructure such as airports, railways, and lake/river/canal systems respectively. Rail-based solutions could be further subdivided into interurban passenger rail (e.g. VIA, inter-regional GO Transit trains), intra-urban passenger rail (e.g. Light Rail (LRT)) and freight rail (CNR, CPR).

The vast majority of trips in the study area are made using automobiles and trucks. The scattered distribution of origins and destinations between the study area and beyond, and the modal transfer requirements that will likely be necessary are not conducive to developing and sustaining large transit ridership. Highway 17, in the study area, does not contain uniform and condensed developed urban density that would warrant additional transit service. This being the case, travellers would not be able to access final destinations removed from the immediate area using the Highway 17 bus service or the Toronto-Sudbury VIA Rail Service. Rather an intensive network of local transit would be required to serve the whole catchment area. This would be financially unsound for the local transit operation and consequently for the corridor transit operation.

Moving more people and goods by rail or water does free capacity on Highway 17, but requires the associated infrastructure such as airports, railways, and lake/river/canal systems respectively. Rail-based solutions could be further subdivided into interurban passenger rail (e.g. VIA, inter-regional GO Transit trains), intra-urban passenger rail (e.g. Light Rail (LRT)) and freight rail (CNR, CPR).

Improvements to non-roadway based facilities were not carried forward for further consideration.

d. Improvements to other Roadways

Roadway Operational Improvements

This option includes improving the operations of the existing road system by using one-way roads, advanced traffic signalling, and electronic traffic management techniques, such that an adequate level of service is provided to road users. However, this alternative is most successful when addressing local traffic deficiency problems in urban areas.

Roadway Infrastructure Improvements

This option includes improving capacity through widening, twinning, grade separation, localized improvements, etc., to upgrade one or more existing local roads and thereby expand capacity and improve operations.

Widening municipal roads to accommodate long-distance through traffic is not a reasonable alternative to the undertaking since these roads primarily serve local trips. Mixing long-distance through traffic and local traffic creates other transportation network concerns:

- Municipal roads are not generally designed and maintained to standards required for high-speed, long-distance traffic. This creates operational, safety and maintenance concerns.
- Municipal roads serve as area access roads. The mix of slower-moving and turning traffic with high-speed through traffic also creates safety concerns.

There are no continuous east-west municipal roads in the area. Municipal roads are intended to serve local access needs, not inter-regional and long distance travel. Therefore, upgrading existing municipal roads or constructing new municipal roads would not be an effective alternative since it does not reduce the need to improve Highway 17. This alternative is not recommended.

e. Improve / Expand Existing Highway 17

Highway 17 improvements may include twinning of the existing highway as a major improvement made within the highway corridor.

Through a process of rationally eliminating other alternatives to the undertaking, improving and expanding Highway 17 is selected as one of the preferred “Alternatives to the Undertaking” given the following rationale:

- Realizes objectives of the Ontario Government policy and long term transportation and economic planning;
- Provides opportunity to accommodate future capacity and operational needs;
- Maximizes use of existing Highway 17; and

Stages the improvements in such a way that funding can be incrementally applied as available and such that the demand for corridor improvements can be satisfied on a priority basis. Therefore, “Improve/Expand Existing Highway 17” was carried forward for further consideration.

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February 2014
Highway 17, from Highway 11 South Junction easterly to 2.7 km east of Highway 531 Planning, Preliminary Design and Class Environmental Assessment Study, GWP 5103-09-00

**Planning, Preliminary Design and Class Environmental Assessment Study, GWP 5103-09-00**

**Ministry of Transportation Ontario, Northeastern Region**

**Transportation Environmental Study Report**

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**f. Provide a New Highway 17 Realignment**

Providing a new Highway 17 realignment is selected as one of the preferred “Alternatives to the Undertaking” given the following rationale:

- Realizes objectives of the Ontario Government policy and long term transportation and economic planning;
- Provides an opportunity to accommodate future capacity and operational needs;
- Provides a new realigned highway that meets MTO requirements design standards;
- Provides adequate geometrics and lane capacity to alleviate operational deficiencies on Highway 17; and
- Increases safety and operations and brings about opportunities such as developing/enhancing an economic corridor.

Therefore, “Provide a New Highway 17 Realignment” was also carried forward for further consideration.

**5.1.1 Preferred Planning Alternative**

In summary, “Improve / Expand Existing Highway 17” and “Provide a New Highway 17 Realignment” were selected as the preferred planning alternatives and were carried forward for further study. Both alternatives address the stated problems and opportunities and provide the optimal combination of benefits to transportation with low impacts to local communities and the environment, as compared to the other alternatives. They also help to meet the area’s future needs and are consistent with the existing system.

**5.2 Alternative Methods**

The evaluation of planning alternatives identified “Improve / Expand Existing Highway 17” and “Provide a New Highway 17 Realignment” to be carried forward for further review. Alternative methods of carrying out the undertaking (or simply, alternative methods) refers to the range of improvement alternatives that were considered for “Improve / Expand Existing Highway 17” or “Providing a New Highway 17 Realignment”. Alternative methods involved determining the overall preferred realignment, preferred interchanges and preferred service road network.

The generation of alternative methods of carrying out the undertaking considers constraints and opportunities within the study area. Secondary sources, such as aerial photography, large-scale mapping from external agencies and municipal Official Plans, were used to identify significant features in the study area. Detailed data collection, including field investigations, meetings with interested groups and individuals and discussions with ministries, First Nations and Aboriginal groups, municipalities, provincial and federal agencies and the public were conducted to obtain input into the generation of alternative methods as well as an appreciation for potential benefits and impacts to environmental features. One of the objectives of Public Information Centre (PIC) #1, held in November 2011, was to obtain input on the preliminary corridor alternatives and the proposed evaluation criteria. See Section 6.1.3.1 for more information on PIC #1.

**Exhibit 5-2a** presents an overview of the planning process, including the review of alternative methods. **Exhibit 5-2b** illustrates the detailed highway planning process for determining the preferred realignment.

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**Exhibit 5-2a: Highway Planning Process**

- **IDENTIFY THE STUDY AREA**
- **PREPARE ENVIRONMENTAL CONSTRAINTS MAP**
- **IDENTIFY / SCREEN CORRIDOR ALTERNATIVES**
- **IDENTIFY / SCREEN “LONG LIST” OF REALIGNMENT ALTERNATIVES**
- **IDENTIFY “SHORT LIST” OF REALIGNMENT ALTERNATIVES**
- **ASSESS / EVALUATE REALIGNMENT ALTERNATIVES**
- **IDENTIFY PREFERRED REALIGNMENT / INTERCHANGE / SERVICE ROAD ALTERNATIVES**
- **ASSESS / EVALUATE INTERCHANGE / SERVICE ROAD ALTERNATIVES**
- **IDENTIFY PREFERRED PLAN / PREPARE PRELIMINARY DESIGN**

**5.2.1.1 Improve / Expand Existing Highway 17 – Screening**

Upon further review by the Project Team, twinning existing Highway 17 was screened out as an alternative method since existing Highway 17 does not meet current design standards for a four-lane controlled access facility, thus, the existing highway would require full reconstruction. In addition, full reconstruction of the existing highway would require the permanent displacement of all residences and businesses along existing Highway 17. As these impacts were considered too significant, the assessment of corridor and realignment alternatives focused on looking solely at a new highway realignment.
Top identified alignments

Constraints mapping for identifying new corridors

See Exhibit 5-3
See Exhibit 5-4
See Exhibit 5-5
See Exhibit 5-6
See Exhibit 5-7
See Exhibit 5-8
See Exhibit 5-9
See Exhibit 5-10
See Exhibit 5-11
See Exhibit 5-12
See Exhibit 5-13
See Exhibit 5-14
See Exhibit 5-15
See Exhibit 5-16
See Exhibit 5-17
See Exhibit 5-18
See Exhibit 5-19
See Exhibit 5-20
5.2.1.2 Generation and Assessment of Corridor Alternatives

Based on principles of transportation engineering and environmental protection as outlined in the Class EA, a reasonable range of corridor alternatives was reviewed. Alternatives were developed that capitalized on significant transportation opportunities while protecting significant environmental features to the greatest extent possible.

There were numerous possible locations for a future realigned Highway 17 within the study area. Various starting points of the potential realignment were considered along Highway 11 between North Bay (the south Highway 11/17 junction) and Callander, while opportunities to tie-in to the existing Highway 17 were examined east of Highway 531 for the end point of the realignment. The purpose of the evaluation process was primarily to narrow down possible locations, at a relatively broad scale, while still maintaining sufficient flexibility for investigating a variety of realignment alternatives.

QUANTM Alignment Optimization Software was used to augment this stage of the study process. QUANTM software has the unique ability to simultaneously consider environment, community, heritage and water management issues in parallel with possible highway alignment variations to generate various alternative corridors and realignments. The use of QUANTM optimization software to assist with identifying and evaluating potential corridors greatly increases the efficiency and reliability of the corridor/realignment selection process, compared to traditional manual methods. QUANTM permits virtually every possible alternative to be generated and assessed, taking into account the relative significance of the constraints within the study area and geometric/constructability requirements of the highway alignment. While QUANTM is not a substitute for sound, professional engineering and environmental judgement, its ability to simultaneously consider key issues in parallel with considering the crossing of linear features, floodplains and geology makes it a highly valuable tool and greatly improves the efficiency and efficacy of the analysis and evaluation process.

As shown in Exhibit 5-2b, the following planning steps involving QUANTM alignment optimisation and a comprehensive evaluation process were undertaken to identify realignment alternatives:

- Identification of the Study Area based on natural boundaries and potential Start (Highway 11) / End (east study limit) points.
- Development of detailed constraint mapping and a Digital Terrain Model of the study area (input to QUANTM). A Digital Terrain Model is a 3D representation of a terrain's surface, typically created from terrain elevation data. The sample terrain mapping is shown in Exhibit 5-3.
- An initial run of QUANTM based on the identified constraints, to establish the general corridors within which the realignment alternatives could be located. This is shown in Exhibit 5-4.
- Corridor screening process based on initial assessment of rationale and impacts (e.g. out of way corridors eliminated).
- Generation of realignment alternatives within the identified corridors using QUANTM processes (long list of realignment alternatives).
- Initial screening of the "long list" of realignment alternatives including initial assessment of impacts and costs, and refined QUANTM runs to establish a short list of realignment alternatives for further assessment, evaluation and selection of the preferred realignment.

An initial corridor width of 500 m was selected as an appropriate size to provide flexibility in the future development of potential realignments and minimize impacts on significant features. Digital topographic Ontario Base Mapping (OBM) and a Digital Terrain Model based on 5 m contours were used to identify and develop corridor/realignment alternatives.

Environmental Constraints

Specific tasks for ensuring environmental protection during the evaluation process included:

- Identification of environmental features within the study area;
- Classification of environmental features to assess their significance; and
- Development of environmental features/ constraints mapping to identify/ develop corridor alternatives.

This work was based primarily on secondary source information, air photo interpretation, exploratory field visits to verify data and a project team workshop. The creation of the environmental features/ constraints map was important in determining areas that should be avoided to the greatest extent possible and to identify the potential direct and/or indirect environmental impacts of the various corridor alternatives. The environmental constraints mapping is shown in Exhibits 5-5 and 5-6. The mapping was generated using information compiled as part of the existing conditions research which was presented previously in Section 4.0. The environmental features/ constraints map was also used to identify the areas where impacts may be less significant. The environmental features / constraints map was shown at PIC #1 and at presentations for input from the public, First Nations and Aboriginal groups, local municipalities and external agencies.

The Project Team also undertook flight reconnaissance of the study area before corridors and realignments were considered. Photographic and video documentation was created which was used to provide a greater understanding of the environmental features outside of the existing Highway 17 corridor, especially in areas with heavy vegetation and rugged topography. The reconnaissance assisted in further developing environmental features mapping and reviewing corridor and realignment alternatives.

"Long List" of Corridor Alternatives

Based on the foregoing approach, a "long list" of the corridor alternatives was identified. A screening process was applied to the "long list" of corridors. The advantages and disadvantages of each segment were considered to determine which corridors were set aside or carried forward for further review (e.g. "out of the way" south corridors were eliminated). The initial "long list" of corridor alternatives is shown in Exhibit 5-7, along with the rationale for the screening of alternatives.

"Short List" of Corridor Alternatives

Following the screening of the "long list" of corridor alternatives, a "short list" of corridor alternatives was developed, for which realignment alternatives were generated. The "short list" of corridor alternatives is shown in Exhibit 5-8, along with the rationale for the screening of alternatives.
5.2.1.3 Generation and Assessment of Realignment Alternatives

Realignment alternatives were identified and developed for the “short listed” corridors with the support of QUANTM software.

The evaluation of the realignment alternatives was undertaken as follows:

- The “long list” of realignment alternatives was screened based on an initial assessment of impacts and costs.
- All components of the environment were considered. The focus of decision making was on those factors and indicators that were likely to differentiate one alternative from another.
- Realignments that were likely to result in significantly higher impacts, even after mitigation, were set aside. Realignments exhibiting disadvantages and no advantages were set aside.
- The completed impact assessments provided relevant and, where possible, quantified data regarding impacts of alternatives related to the factors, criteria and indicators as shown in Exhibit 5-9.
- The public, First Nations and Aboriginal groups, local municipalities and external agencies were given the opportunity to participate in and review the evaluation process during the first and second rounds of public consultation.
Water Bodies, Deer Wintering Areas, Waterfowl Areas

Roads and Railways

Undisturbed Habitat, Wetlands

Settlements and Agriculture

SAMPLE THEMATIC MAPPING
This potential corridor was set aside due to significant impacts to residents on Centennial Crescent.

These potential corridors were set aside due to out-of-way travel and longer length of highway construction.

Corridor alternatives that connected to Highway 11 near Derland Road were set aside since these potential corridors would require significant out-of-way travel between North Bay and existing Highway 17 at the east study limit.
This potential corridor was added to provide an alternate connection to Highway 11 for the potential corridors that primarily run along existing Highway 17.

This potential corridor alternative was shifted to the north to minimize impacts to the aggregate site.

Potential corridor alternatives at the east end of the study area were amalgamated due to their close proximity to each other.
5.2.1.4 “Long List” of Realignment Alternatives

A “long list” of realignment alternatives was generated using QUANTM, based on the location of the “short list” of corridor alternatives. The initial “long list” of realignment alternatives is shown in Exhibit 5-10.

The “long list” of realignment alternatives was subdivided into groupings of segments that achieve similar endpoints. As shown in Exhibit 5-11, the segments with similar endpoints are displayed with the same colour as follows:

- Orange Realignments – begin at or near the existing Highway 11/17 interchange, and keep along existing Highway 17, ending at Dube Road.
- Purple Realignments – begin at Dube Road, and keep northerly and southerly (from Maple Road) of the existing Highway 17 corridor, tying in to the existing Highway 17 east of Highway 531 from north or south.
- Blue Realignments – begin at Highway 11 at two start points north and south of the existing Highway 11/Lakeshore Drive interchange, and keep southerly of the existing Highway 17, ending around Dube Road.
- Green Realignments – southerly alignments beginning at a common node where blue alignments merge/cross west of Highway 94, tying in to purple alignments at Highway 531.

These realignment alternatives were presented to the public, municipalities and other project stakeholders during first round of public consultation, including Public Information Centre (PIC) #1, to seek public input to be used in further adjustments assessment and evaluation of alternatives.

The segments were screened based on an initial assessment of impacts and costs to determine the realignments which would be carried forward for further evaluation. Exhibit 5-11 also shows the screening of the “long list” of alternatives. This screening was also presented at PIC #2 for public input. See Section 6.1.3.2 for more information on PIC #2.

5.2.1.5 “Short List” of Realignment Alternatives

Following the screening of the “long list” of realignment alternatives, a “short list” of realignment alternatives was developed based on input obtained from the public and project stakeholders during consultation, and was reviewed and further developed using design principles and methods. The “short list” of realignment alternatives was evaluated in detail using the criteria outlined in Exhibit 5-9. Exhibits 5-12a to 5-12d illustrate the “short list” of realignment alternatives, which were separated based upon each of the four identified starting points along Highway 11. The starting point locations were identified based on a separate analysis of spacing requirements between the interchanges and a need for an interchange connecting the realigned Highway 17 to Highway 11. The potential for an additional municipal connection (Marshall Avenue extension) to Highway 11 was also considered in the analysis.

The assessment / evaluation summary of all of the considered realignment alternatives is outlined in Exhibits 5-13 to 5-15.
<table>
<thead>
<tr>
<th>Factors</th>
<th>Criteria / Measurement / Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>• Accomodates long term planning objectives  &lt;br&gt;• Accommodates projected traffic demand  &lt;br&gt;• Enhances safety  &lt;br&gt;• Considers traffic operations on municipal roads and intersections  &lt;br&gt;• Overall design standard consistent with Geometric Standards for Ontario  &lt;br&gt;• Supports the municipal road network  &lt;br&gt;• Considers travel time / out of way travel  &lt;br&gt;• Highway network efficiency (travel time / distance)</td>
</tr>
<tr>
<td>Engineering and</td>
<td>• Complexity and difficulty of construction  &lt;br&gt;• Traffic management during construction  &lt;br&gt;• Suitability for construction phasing and staging</td>
</tr>
<tr>
<td>Constructability</td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>• Cost including construction, utility relocation and property requirements</td>
</tr>
</tbody>
</table>
SET ASIDE
- High impact to development lands and existing development north of Highway 17 in City of North Bay.

SET ASIDE
- Requires too many crossings of existing Highway 17 or requires a new service road to maintain access to existing development / properties north and south of existing highway 17.

SET ASIDE
- These realignments were set aside for environmental impacts such as impacting core habitat areas, wetlands and provincial park lands.

SET ASIDE
- These realignments are too far from existing Highway 17. They result in too much out-of-way travel for highway users. Habitat fragmentation and landscape ecology implications are too significant.

ORANGE (O) REALIGNMENTS
- Blue Realignments
- Green Realignments
- Purple Realignments

SCREENING OF LONG LIST OF REALIGNMENT ALTERNATIVES

EXHIBIT 5-11

G.W.P. 5105-09-00
HIGHWAY 17 PLANNING STUDY
from Highway 11 South Junction Easterly to 2.7 km East of Highway 531
Planning, Preliminary Design and Class Environmental Assessment Study
STARTING POINT #3, REALIGNMENT ALTERNATIVES 8-12 (SHORT LIST)