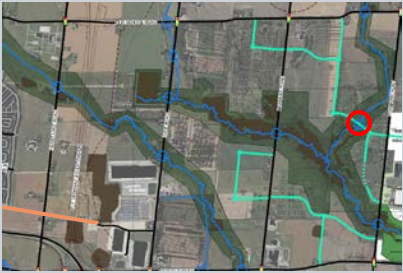









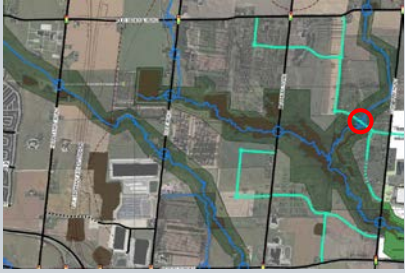

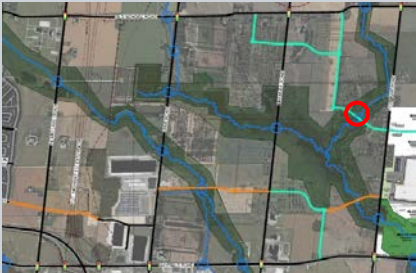
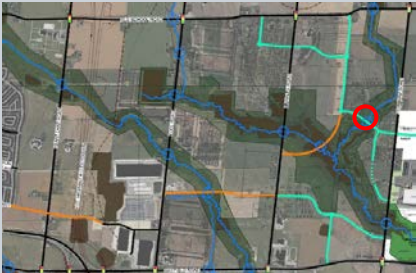



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<p><b>Natural Heritage</b></p> <p><b>Desktop evaluation of relative impacts to the Greenbelt Natural Heritage System and associated natural heritage features / hydrologic features (e.g., valleylands, woodlands, wetlands, and watercourses)</b></p> <p><b>Site specific studies are required to determine presence/absence of Key Natural Heritage Features / Key Hydrologic Features, identify potential impacts, required mitigation, and authorization requirements associated with the preferred alignment.</b></p>	<p>Requires no additional crossings.</p>	<p>Requires one additional crossing.</p> <p>The crossing is a relatively <u>moderate length</u> crossing of the Greenbelt Natural Heritage System west of Bramalea that includes:</p> <ul style="list-style-type: none"> <li>Campbell Cross Creek (high constraint watercourse, Redside Dace Occupied Habitat)</li> <li>Unevaluated Wetlands</li> <li>Significant Valleyland</li> </ul> <p>Requires a new crossing which will result in some disturbance of unevaluated wetland features and occupied RSD habitat.</p>	<p>Requires two additional crossings. The first is a relatively <u>moderate length</u> crossing of the Greenbelt Natural Heritage System that includes:</p> <ul style="list-style-type: none"> <li>West Humber Tributary (high constraint watercourse, Redside Dace Occupied Habitat)</li> <li>Unevaluated Wetlands</li> <li>Significant Woodland</li> <li>Significant Valleyland</li> <li>SAR Habitat – Bobolink</li> <li>Candidate SAR Habitat - Bats</li> </ul> <p>This is a new crossing over multiple significant features (woodland, wetland, valleyland) which will result in relatively <u>high</u> fragmentation and edge effects to the Natural Heritage System. There will also be disturbance to SAR habitat including cultural meadow Bobolink Habitat, candidate Bat SAR habitat within the woodlands, and Redside Dace occupied habitat in the high constraint watercourse.</p> <p>The second crossing is a relatively <u>moderate length</u> crossing of the Greenbelt Natural Heritage System west of Bramalea that includes:</p> <ul style="list-style-type: none"> <li>Campbell Cross Creek (high constraint watercourse, Redside Dace Occupied Habitat)</li> <li>Unevaluated Wetlands</li> <li>Significant Valleyland</li> </ul> <p>Requires a new crossing which will result in some disturbance of unevaluated wetland features and occupied RSD habitat.</p>	<p>Requires two additional crossings. The first is a relatively <u>long</u> crossing of the Greenbelt Natural Heritage System that includes:</p> <ul style="list-style-type: none"> <li>West Humber Tributary (high constraint watercourse, Redside Dace Occupied Habitat)</li> <li>Significant Woodland</li> <li>Candidate Significant Wetland</li> <li>Significant Valleyland</li> <li>Candidate SAR Habitat – Bats</li> </ul> <p>Requires a new crossing over multiple significant features (woodland, wetland, valleyland) which will result in relatively <u>high</u> fragmentation and edge effects to the Natural Heritage System. There will also be disturbance to SAR habitat including candidate Bat SAR habitat within the woodlands, and Redside Dace occupied habitat in the high constraint watercourse.</p> <p>The second crossing is a relatively <u>moderate length</u> crossing of the Greenbelt Natural Heritage System west of Bramalea that includes:</p> <ul style="list-style-type: none"> <li>Campbell Cross Creek (high constraint watercourse, Redside Dace Occupied Habitat)</li> <li>Unevaluated Wetlands</li> <li>Significant Valleyland</li> </ul> <p>Requires a new crossing which will result in some disturbance of unevaluated wetland features and occupied RSD habitat.</p>	<p>Requires two additional crossings. The first is a relatively <u>long</u> crossing of the Greenbelt Natural Heritage System that includes:</p> <ul style="list-style-type: none"> <li>West Humber Tributary (high constraint watercourse, Redside Dace Occupied Habitat)</li> <li>Significant Woodland</li> <li>Candidate Significant Wetland</li> <li>Significant Valleyland</li> <li>Candidate SAR Habitat – Bats</li> </ul> <p>Requires a new crossing over multiple significant features (woodland, wetland, valleyland) which will result in relatively <u>high</u> fragmentation and edge effects to the Natural Heritage System. There will also be disturbance to SAR habitat including candidate Bat SAR habitat within the woodlands, and Redside Dace occupied habitat in the high constraint watercourse.</p> <p>The second crossing is a relatively <u>moderate length</u> crossing of the Greenbelt Natural Heritage System west of Bramalea that includes:</p> <ul style="list-style-type: none"> <li>Campbell Cross Creek (high constraint watercourse, Redside Dace Occupied Habitat)</li> <li>Unevaluated Wetlands</li> <li>Significant Valleyland</li> </ul> <p>Requires a new crossing which will result in some disturbance of unevaluated wetland features and occupied RSD habitat.</p>




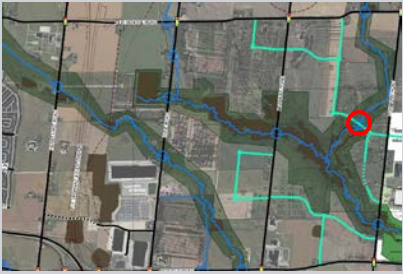

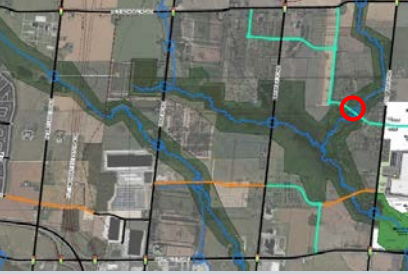

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<div> <div></div>Previously Proposed Collector Road <div></div>New Collector Road for Consideration <div></div>Crossing not considered in this study (common to all options) </div>					
<p><b>Conformity with Greenbelt Policies</b></p> <p><b>See attached Greenbelt Plan comparison matrix for more details.</b></p>	<ul style="list-style-type: none"> <li>Aligns strongly with Greenbelt Policies as it minimizes traversal/impact of the greenbelt/NHS to the greatest extent compared to the other options as it only proposes an expanded crossing of the Valleyland within the golfcourse and makes use of the existing golf cart path/crossing location.</li> </ul>	<ul style="list-style-type: none"> <li>Aligns strongly with Greenbelt Policies as it minimizes traversal/impact of the greenbelt/NHS to the greatest extent compared to the other options as it only proposes an expanded crossing of the Valleyland within the golfcourse and makes use of the existing golf cart path/crossing.</li> <li>This results in impacts limited to some disturbance of unevaluated wetland features and occupied RSD habitat.</li> </ul>	<ul style="list-style-type: none"> <li>Aligns moderately with the Greenbelt Policies as it minimizes the length of traversal of the greenbelt/NHS but is more invasive than Option 1 due to its proposed new crossing traversing multiple significant features.</li> <li>This results in relatively <u>high</u> fragmentation and edge effects to the Natural Heritage System and disturbance to SAR habitat including cultural meadow Bobolink Habitat, candidate Bat SAR habitat within the woodlands, and Redside Dace occupied habitat in the high constraint watercourse.</li> </ul>	<ul style="list-style-type: none"> <li>Arguably not the strongest conformity with Greenbelt policies due to the availability of less impactful/ invasive traversals presented in Options 1 and 2.</li> <li>Greenbelt policies require traversal and impacts of required infrastructure to be minimized <u>to the greatest extent possible</u> however this requires long traversal lengths in the NHS over multiple significant features.</li> <li>This results in relatively <u>high</u> fragmentation and edge effects to the Natural Heritage System and disturbance to SAR habitat including candidate Bat SAR habitat within the woodlands and Redside Dace occupied habitat in the high constraint watercourse.</li> </ul>	<ul style="list-style-type: none"> <li>Arguably not the strongest conformity with Greenbelt policies due to the availability of less impactful/ invasive traversals presented in Options 1 and 2.</li> <li>Greenbelt policies require traversal and impacts of required infrastructure to be minimized <u>to the greatest extent possible</u> however this requires long traversal lengths in the NHS over multiple significant features.</li> <li>This results in relatively <u>high</u> fragmentation and edge effects to the Natural Heritage System and disturbance to SAR habitat including candidate Bat SAR habitat within the woodlands and Redside Dace occupied habitat in the high constraint watercourse.</li> </ul>

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<b>Grading and Serviceability</b> <ul style="list-style-type: none"> <li><b>Desktop evaluation of water, sanitary, and storm servicing requirements</b></li> <li><b>Preliminary evaluation of anticipated crossing grading</b></li> <li><b>None of the options have water or sanitary or sanitary considerations.</b></li> </ul>	No grading considerations required					<p>A localized storm sewer and outlet may be required to convey storm drainage from the single crossing.</p> <p>Feasible from a grading perspective (approx. valley wall height = 13m)</p>	<p>Localized storm sewer and outlet may be required to convey storm drainage from the two crossings.</p> <p>Crossing to Secondary Plan D2 (west of Mayfield Tullamore Secondary) feasible from a grading perspective (approx. valley wall height = 4-5m).</p>	<p>Localized storm sewer and outlet may be required to convey storm drainage from the two crossings.</p> <p>Crossing to Secondary Plan D2 (west of Mayfield Tullamore Secondary) feasible from a grading perspective (approx. valley wall height = 4-5m).</p> <p>Mayfield Tullamore Crossing feasible from a grading perspective (approx. valley wall height = 13m).</p>	<p>Localized storm sewer and outlet may be required to convey storm drainage from the two crossings.</p> <p>Crossing to Secondary Plan D2 (west of Mayfield Tullamore Secondary) complex from a grading perspective with potentially large area of impact (crossing watercourse on an angle, grading to support intersection geometry, constructability around existing buildings and infrastructure, etc.).</p> <p>Mayfield Tullamore Crossing feasible from a grading perspective (approx. valley wall height = 13m).</p>
<b>Cost of the Connection</b> <ul style="list-style-type: none"> <li><b>Preliminary assessment of crossing and collector road costs</b></li> </ul>	Base Option from a costing standpoint.					<p>Increased operations and maintenance costs associated with collector road and single crossing structure</p> <p>Crossing to Secondary Plan D2 (west of Mayfield Tullamore Secondary) plan anticipated to be less expensive that Option 3 and 4 due to the complexities of grading and culvert infrastructure at the intersection at Bramalea Road in Options 3 and 4 (crossing watercourse on an angle, grading to support intersection geometry, constructability around existing buildings and infrastructure, etc.).</p>	<p>High-Level preliminary Mayfield Tullamore Secondary Plan crossing cost of approximately \$12.6 million</p> <p>Increased operations and maintenance costs associated with collector road and two crossing structures</p> <p>Limited earthworks fill volume required</p> <p>Crossing to Secondary Plan D2 (west of Mayfield Tullamore Secondary) plan anticipated to be less expensive that Option 3 and 4 due to the complexities of grading and culvert infrastructure at the intersection at Bramalea Road in Options 3 and 4 (crossing watercourse on an angle, grading to support intersection geometry, constructability around existing buildings and infrastructure, etc.).</p>	<p>High-Level preliminary Mayfield Tullamore Secondary Plan crossing cost of approximately \$16.7 million</p> <p>Increased operations and maintenance costs associated with collector road and two crossing structures</p> <p>Significant earthworks fill volume required</p> <p>Crossing to Secondary Plan D2 (west of Mayfield Tullamore Secondary) plan anticipated to be more expensive that Option 1 and 2 due to the complexities of grading and culvert infrastructure at the intersection at Bramalea Road in Options 3 and 4 (crossing watercourse on an angle, grading to support intersection geometry, constructability around existing buildings and infrastructure, etc.).</p>	<p>High-Level preliminary Mayfield Tullamore Secondary Plan crossing cost of approximately \$16.7 million</p> <p>Increased operations and maintenance costs associated with collector road and two crossing structures</p> <p>Significant earthworks fill volume required</p> <p>Crossing to Secondary Plan D2 (west of Mayfield Tullamore Secondary) plan anticipated to be more expensive that Option 1 and 2 due to the complexities of grading and culvert infrastructure at the intersection at Bramalea Road in Options 3 and 4 (crossing watercourse on an angle, grading to support intersection geometry, constructability around existing buildings and infrastructure, etc.).</p>

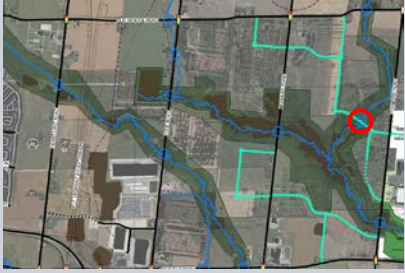

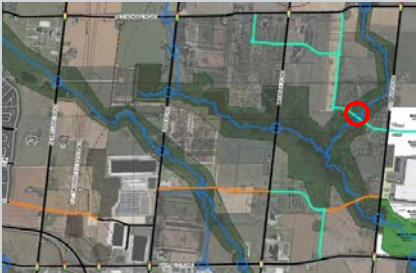




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<b>Transportation Connectivity Between Communities. This is whether the plan provides additional connectivity between residential communities.</b>	<p>Connection between Southfields and Tullamore best provided by Old School Road or Mayfield Road</p> <p>Connection between communities east and west of Bramalea is best provided by direct collector connections for both north and south development areas.</p> <p>Connection between north and south communities along Bramalea is best provided by Bramalea.</p> <p>Connections east of Torbram best achieved through arterial roads, with collector alternative provided.</p> <p>Collector alignment “broken” at Dixie, Torbram, east of Torbram</p>	<p>Connection between Southfields and Tullamore best provided by Old School Road or Mayfield Road</p> <p>Connection between communities east and west of Bramalea is best provided by direct collector connections for both north and south development areas.</p> <p>Connection between north and south communities along Bramalea is best provided by Bramalea.</p> <p>Connections east of Torbram best achieved through arterial roads, with collector alternative provided.</p> <p>Collector alignment “broken” at Dixie, Torbram, east of Torbram</p>	<p>Connection between Southfields and Tullamore best provided by Old School Road or Mayfield Road</p> <p>Connection between communities east and west of Bramalea is best provided by direct collector connections for both north and south development areas.</p> <p>Connection between north and south communities along Bramalea is best provided by Bramalea.</p> <p>Connections east of Torbram best achieved through arterial roads, with collector alternative provided.</p> <p>Collector alignment “broken” at Dixie, Torbram, east of Torbram</p>	<p>Connection between Southfields and Bramalea (Tullamore) best provided by Old School Road or Mayfield Road</p> <p>Connection between communities east and west of Bramalea is best provided by direct collector connections for both north and south development areas.</p> <p>Connection between north and south communities west of Bramalea is best provided by Bramalea. Connection between north and south communities east of Bramalea partially provided by collector.</p> <p>Connections east of Torbram best achieved through arterial roads, with collector alternative provided.</p> <p>Collector alignment “broken” at Dixie, Torbram, east of Torbram</p>	<p>Connection between Southfields and Tullamore provided by Old School Road, Mayfield Road, or collector road</p> <p>Connection between communities east and west of Bramalea is best provided by direct collector connections for both north and south development areas.</p> <p>Connection between north and south communities west of Bramalea is best provided by Bramalea. Connection between north and south communities east of Bramalea partially provided by collector.</p> <p>Connections east of Torbram best achieved through arterial roads, with collector alternative provided.</p> <p>Collector alignment “broken” east of Bramalea, east of Torbram</p>

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<b>Potential for Truck Infiltration from Employment Areas into the Residential Community</b>	None	<p>Modest.</p> <p>Southern Dixie industrial sites best served by reaching 410 interchange via Dixie Road and Mayfield.</p> <p>Central Dixie industrial sites partially served by accessing 413 at Bramalea via E-W Collector, best served by using Dixie to go north or south</p> <p>Northern Dixie industrial sites best served by reaching 413 at Bramalea via Old School Road</p>	<p>Modest.</p> <p>Southern Dixie industrial sites best served by reaching 410 interchange via Dixie Road and Mayfield.</p> <p>Central Dixie industrial sites partially served by accessing 413 at Bramalea via E-W Collector, best served by using Dixie to go north or south</p> <p>Northern Dixie industrial sites best served by reaching 413 at Bramalea via Old School Road</p>	<p>Modest.</p> <p>Southern Dixie industrial sites best served by reaching 410 interchange via Dixie Road and Mayfield.</p> <p>Central Dixie industrial sites partially served by accessing 413 at Bramalea via E-W Collector, best served by using Dixie to go north or south</p> <p>Northern Dixie industrial sites best served by reaching 413 at Bramalea via Old School Road</p>	<p>High.</p> <p>900 Vehicles per day including 350 trucks</p> <p>Southern Dixie industrial sites best served by reaching 410 interchange via Dixie Road and Mayfield.</p> <p>Central Dixie industrial sites best served by accessing 413 at Bramalea via E-W Collector</p> <p>Northern Dixie industrial sites best served by reaching 413 at Bramalea via Old School Road, increased potential to use E-W Collector if capacity / turning constraints developed on Old School develop long term.</p>
<b>Capacity Benefits on Old School Road</b>	None	Modest, if any, benefits to traffic operations.	Modest, if any, benefits to traffic operations.	Modest, if any, benefits to traffic operations.	<p>This will divert some employment-related traffic away from Dixie / Old School to Bramalea.</p> <p>The Town's TMP did not identify the need for the collector road network to carry east-west traffic through the community.</p>

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Impacts to Viability of Employment Lands	None	<p>Minimal</p> <p>Collector west of Dixie Road relies upon existing/planned roadways.</p> <p>Collector east of Dixie avoids major sites / sites with largest development footprint.</p> <p>Property impacts likely limited to single property within employment zone.</p>	<p>Minimal</p> <p>Collector west of Dixie Road relies upon existing/planned roadways.</p> <p>Collector east of Dixie avoids major sites / sites with largest development footprint.</p> <p>Property impacts likely limited to single property within employment zone.</p>	<p>Minimal</p> <p>Collector west of Dixie Road relies upon existing/planned roadways.</p> <p>Collector east of Dixie avoids major sites / sites with largest development footprint.</p> <p>Property impacts likely limited to single property within employment zone.</p>	<p>Significant</p> <p>New collector west of Dixie impacts multiple properties. Requires additional over/under pass to cross Highway 413, duplicating Abbotside / Spiers Giffen over/under pass.</p> <p>Collector east of Dixie significantly impacts the development potential of major employment parcel. The loss of employment development potential is estimated at 1 million ft<sup>2</sup>, equating to ~\$2.3 million in lost property taxes, ~\$29.6 million in forgone development charges, and approximately 715 jobs.</p>
Collector Road / Dixie Road Intersections	<p>None</p> <p>Single signalized intersection at Abbotside Way / Dixie Road to allow traffic from west of Heart Lake Road to reach Dixie. No eastern leg.</p>	<p>Manageable</p> <p>Two signalized intersections (one to terminate west leg of Collector Road, one to terminate east leg of Collector Road).</p> <p>Signalized intersection spacing inline with Regional requirements / adequate spacing provided between proposed/existing site accesses. Access design adjustments potentially necessary for 12173 Dixie.</p> <p>Collector Road intersections occur within conventional right-of-way.</p>	<p>Manageable</p> <p>Two signalized intersections (one to terminate west leg of Collector Road, one to terminate east leg of Collector Road).</p> <p>Signalized intersection spacing inline with Regional requirements / adequate spacing provided between proposed/existing site accesses. Access design adjustments potentially necessary for 12173 Dixie.</p> <p>Collector Road intersections occur within conventional right-of-way.</p>	<p>Manageable</p> <p>Two signalized intersections (one to terminate west leg of Collector Road, one to terminate east leg of Collector Road).</p> <p>Signalized intersection spacing inline with Regional requirements / adequate spacing provided between proposed/existing site accesses. Access design adjustments potentially necessary for 12173 Dixie.</p> <p>Collector Road intersections occur within conventional right-of-way.</p>	<p>Challenging</p> <p>Signalized intersection spacing negatively impacts other parcels (including 12688 Dixie) which would be unlikely to have an all-moves site driveway approved – increasing traffic on the east-west collector road to reach site entrance.</p> <p>Collector Road intersection occurs entirely within natural heritage area – potentially requires two perpendicular crossings intersecting to avoid infilling.</p>



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<b>Summary and Recommendations</b>	<p>This option is similar to or better than all of the other Options from the perspective of Natural Heritage, Conformity with Greenbelt Policy, Servicing, Cost, Impacts on Employment Lands, and access to Dixie.</p> <p>It provides the least amount of collector road connectivity, primarily due to the lack of a crossing of the Greenbelt Natural Heritage System between Bramalea and Tullamore.</p>	<p>This option is similar to or better than all of the other Options (but not the submitted plan) from the perspective of Natural Heritage, Conformity with Greenbelt Policy, and servicing.</p> <p>From a costing standpoint it is the least expensive of Options 1 through 4, with a single additional crossing of the Natural Heritage System.</p> <p>It has minimal / manageable impacts on the viability of employment lands and access to Dixie.</p> <p>From a connectivity perspective, it is better than the submitted plan and will not lead to use of the collector road in the residential community by employment-related traffic. This connectivity, however, is between an employment area and residential area; it will not provide significant connectivity between planned communities.</p> <p>This option is a simple trade-off from the submitted plan. It is slightly better from a connectivity standpoint at the cost of a relatively expensive and impactful connection across the Greenbelt Natural Heritage System.</p>	<p>This option is similar to Option 1, with the exception of the introduction of a new crossing of the West Humber Tributary in place of a previously planned collector road to the south.</p> <p>Due to previous approvals, this realigned collector road cannot extend east of Tullamore. This option therefore provides no additional connectivity at the cost of an impactful and costly crossing of the Greenbelt Natural Heritage System.</p>	<p>This option is similar to Option 1 with the introduction of a new crossing of the West Humber Tributary.</p> <p>It provides improved connectivity between the southwestern/southeastern and the northeastern ‘quarters’ of the Tullamore community.</p> <p>It provides very little connectivity beyond that and has limited benefits to the overall road network. This new link will not, in and of itself, create midblock connectivity through the SABE lands.</p> <p>This is a trade-off from Option 1. Is the added connectivity between communities worth the introduction of a costly and impactful crossing of the Greenbelt Natural Heritage System?</p> <p>The crossing is something that would be nice to have for residents, but from a policy, cost and Natural Heritage impact standpoint would not be appropriate.</p>	<p>This is similar to Option 3, save the relocation of the connection to Dixie (and beyond) to the north to line up with the NHS crossing.</p> <p>It does not provide any real benefit in terms of connectivity within the Tullamore community compared to Option 3.</p> <p>Offers the highest degree of overall connectivity compared to other Options. It provides a continuous link between Mayfield West and Tullamore.</p> <p>Although offering more overall connectivity, there are four key drawbacks:</p> <ol style="list-style-type: none"> <li>This Option has significant impacts on the employment lands along Dixie (~\$2.3 in forgone property taxes, ~\$29.6m in forgone development charges, and ~715 jobs).</li> <li>It creates significant challenges with respect to access to Dixie.</li> <li>It will lead to employment traffic (approximately 900 vehicles a day, of which 350 will be trucks) driving on the collector road through the residential community.</li> <li>It requires an impactful and costly crossing of the Greenbelt Natural Heritage System.</li> </ol>