

APPENDIX C

SUMMARY OF EXISTING ENVIRONMENT

Table C1 Summary of Existing Environment			
Constraint	Summary of Existing Conditions	Sources Consulted	Relevant Legislation/Regulation/Guidelines
GEOLOGY			
mineral resources	A few known metallic and industrial mineral occurrences are located within the study area, including gypsum, limestone, lead bog manganese, and clay.	<ul style="list-style-type: none"> ▪ D. Hopper, pers. comm. (1997) 	<i>Nova Scotia Mineral Resources Act</i>
sand and gravel deposits	Some sand and gravel deposits, which may still be producing, are located in the western portion of the study area and are anticipated to increase in importance with the realignment project. In addition, these types are possible hosts for aquifers.	<ul style="list-style-type: none"> ▪ D. Hopper, pers. comm. (1997) 	Pit and Quarry Guidelines (NSDOE 1999)
mineralized slates	There are no known occurrences of acid producing slates in the area. The geology and mineralization in the study area do not produce acid generating conditions such as in areas underlain by Meguma rocks.	<ul style="list-style-type: none"> ▪ D. Hopper, pers. comm. (1997) ▪ Review of geological mapping for Antigonish 	<i>Nova Scotia Sulphide Bearing Material Disposal Regulations</i> <i>Fisheries Act</i> <i>Canadian Environmental Protection Act</i> Guidelines for Development on Slates in Nova Scotia (NSDOE and Environment Canada 1991)
shallow bedrock	The majority of the study area is blanketed by compact till, chiefly composed of silt and some clay. Clay till and glaciofluvial sand and gravel deposits underlie the study area. Bedrock outcrops were not noted during the walkover but some exposure is likely at watercourse crossings where the overburden has been eroded.	<ul style="list-style-type: none"> ▪ D. Hopper, pers. comm. (1997) ▪ JWEL Field survey (2002) 	N/A
karst terrain	There is potential for karst development in about 40% of the study area. Area underlain by Windsor Group rocks with near surface gypsum and anhydrite is regarded to have the highest potential for karst development. This occurs in areas underlain by the Gays River and Bridgeville Formations in the north central part of the study area and bounded by the Antigonish Thrust fault. Areas with moderate potential include the Windsor Group rocks that include the Hastings, Hood Island and Addington Formations. These rocks consist of thin interbeds of gypsum and limited but possible karst development. Areas with low potential for karst development include the Mabou Group (formerly Canso Group) rocks. No evidence of Karst development was noted during a walkover of the proposed alignment or during a borehole investigation conducted at the proposed South River crossing.	<ul style="list-style-type: none"> ▪ D. Hopper, pers. comm. (1997) ▪ JWEL Field survey (2002) ▪ Neill and Gunter Ltd. (2001) 	N/A
topography	The alignment follows within 600 m of the current 104 alignment at elevations ranging from sea level at Lower South River, to just over 50 m above sea level, and generally drains northwards through streams and watercourses into Antigonish Harbour.	<ul style="list-style-type: none"> ▪ 1:20000 NTS 	N/A
highly erodible soils	The surface units underlying this area are not known to exhibit any natural constraints attributed to erosion, however there are sandy and silty tills present in the study area which may be susceptible to erosion. The glacial tills are relatively fine grained and are sensitive to moisture. Both tills and glacial fluvial materials are erodible.	<ul style="list-style-type: none"> ▪ D. Hopper, pers. comm. (1997) ▪ C. MacInnis, pers. comm. (1997) ▪ JWEL Field survey (2002) 	<i>Fisheries Act</i>

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TERRESTRIAL ENVIRONMENT			
wildlife management areas	Two wildlife management areas are found in the general vicinity of the proposed highway including the Dagger Woods marsh and the Antigonish Harbour Wildlife Management Areas. The proposed RoW is not located in close proximity to either of these sites.	<ul style="list-style-type: none"> ▪ R. Gautreau, pers. comm. (1997) ▪ M. Pulsifer, pers. comm. (1997) 	N/A
ecological reserves	None present in study area.	<ul style="list-style-type: none"> ▪ D. MacKinnon, pers. comm. (1997) 	N/A
rare and endangered species	<p>Fourteen rare or uncommon vascular plants have been previously recorded in the general vicinity of the study area including <i>Cuscuta cephalantha</i>, <i>Cystopteris bulbifera</i>, <i>Carex eburnea</i>, <i>Bidens hyperborea</i>, <i>Erigeron hyssopifolius</i>, <i>Eupatorium rugosum</i>, <i>Floerka proserpinacoides</i>, <i>Lilium canadensis</i>, <i>Platanthera grandiflora</i>, <i>Potamogeton obtusifolius</i>, <i>Potamogeton praelongus</i>, <i>Samolus floribundus</i>, <i>Triosteum aurantiacum</i>, and <i>Zizia aurea</i>. Three of these species (<i>Lilium canadensis</i>, <i>Platanthera grandiflora</i> and <i>Triosteum aurantiacum</i>) were found along the proposed highway RoW during the field surveys. An additional nine uncommon species were encountered during the field survey including <i>Asclepias incarnata</i>, <i>Fraxinus nigra</i>, <i>Ceratophyllum demersum</i>, <i>Laportea canadensis</i>, <i>Sanguinaria canadensis</i>, <i>Lysimachia thyrsoiflora</i>, <i>Polygonum pensylvanicum</i>, <i>Proserpinaca palustris</i> var. <i>creba</i>, and <i>Potamogeton richardsonii</i>. Eighteen rare or uncommon bird species have been recorded in the general vicinity of the study area including Piping Plover, Whip-poor-will, Wood Thrush, Warbling Vireo, Philadelphia Vireo, Red-breasted Merganser, Eastern Phoebe, Vesper Sparrow, Nelson's Sharp-tailed Sparrow, Northern Goshawk, Common Tern, Arctic Tern, Bobolink, Northern Oriole, Merlin, Black-backed Woodpecker, Boreal Chickadee, and Rusty Blackbird. Three of these species, Nelson's Sharp-tailed Sparrow, Bobolink and Boreal Chickadee were found in or near the proposed RoW. Another uncommon species, Black-billed Cuckoo, which was not previously recorded in the general area was encountered along the RoW. Two raptor species, Bald Eagle and Osprey are known to nest near the RoW. One sensitive reptile species, wood turtle has been reported from the vicinity of the proposed RoW but was not encountered during the field surveys. The only rare or uncommon invertebrate recorded from the area is the Pearl Mussel <i>Margaritifera margaritifera</i> (L.).</p>	<ul style="list-style-type: none"> ▪ R. Ogilvie, pers. comm. (1997) ▪ M. Pulsifer, pers. comm. (1997 and 2002) ▪ A. Hebda, pers. comm. (2002) ▪ Fuller (1998) (unpublished) ▪ Pronych and Wilson (1993) ▪ JWEL Field surveys (2002) ▪ ACCDC (2002) ▪ COSEWIC (2002) 	<p>Nova Scotia <i>Endangered Species Act</i> <i>Species at Risk Act</i> Nova Scotia <i>Wildlife Act</i> <i>Migratory Birds Convention Act</i></p>
managed wetlands	The Dagger Woods Marsh is a managed wetland identified as a constraint. This is a significant Ducks Unlimited project managed jointly with DNR. The area includes the wetland itself and the surrounding Crown Land as well. Water levels are managed on 90 acres of marsh and 124 acres of adjacent uplands are included. This area is not within the study area defined following the selection of the proposed alignment.	<ul style="list-style-type: none"> ▪ J. Wile, pers. comm. (1997) ▪ JWEL Field survey (2002) ▪ Beardmore (1985) 	N/A

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important habitat	Noted important habitat in the study area includes Osprey and Bald Eagle nest sites as well as foraging sites for these species in the South River estuary. The watercourses within the study area are important habitat for salmonids, eel and gaspereau. The South River supports a breeding population of Striped Bass, a species of concern due to declining numbers in the region, and is an exceptional watercourse because of the diversity of species it supports. The Atlantic Salmon is a significant species on the West River. The South River estuary area between the existing Highway 104 and the trestle at the entrance to the Antigonish Harbour was identified as a particularly biologically productive area. There are two sensitive habitat types found along the route including rich intervale habitat at the West River crossing site and coastal freshwater marsh at the South River crossing site. The South River site provides habitat for a variety of sensitive birds	<ul style="list-style-type: none"> ▪ R. Ogilvie, pers. comm. (1997) ▪ M. Pulsifer, pers. comm. (1997 and 2002) ▪ JWEL Field surveys (2002) ▪ Neill and Gunter Ltd. (2001) 	<i>Nova Scotia Wildlife Act</i> <i>Migratory Birds Convention Act</i>
important wetlands	The Dagger Woods Marsh and the South River Estuary have wetlands with Golet Scores exceeding 60. The Brierly Brook wetland has also been identified as a valuable wetland. During the field surveys four wetlands were identified as having moderate value due to their ability to regulate stream flow. The Dagger Woods Marsh is outside the study area.	<ul style="list-style-type: none"> ▪ D. MacKinnon (1999) ▪ R. Gautreau pers. comm. (1997) ▪ M. Pulsifer, pers. comm. (1997) ▪ JWEL Field surveys (2002) 	<i>Migratory Birds Convention Act</i> <i>Nova Scotia Wildlife Act</i> <i>NSDOE Wetlands Directive</i>
protected beaches	None present in the study area.	<ul style="list-style-type: none"> ▪ NSTPW (2001a) ▪ Field reconnaissance ▪ Aerial photographs 	N/A
old growth forest	One site adjacent to West River approximately 2km south of Highway 104 and outside of the proposed RoW was identified by NSDNR. Old growth forest was not observed during field surveys.	<ul style="list-style-type: none"> ▪ D. MacKinnon, pers. comm. (1997) ▪ JWEL Field surveys (2002) 	N/A
trees of distinction	None present in the study area.	<ul style="list-style-type: none"> ▪ Field reconnaissance 	N/A
AQUATIC ENVIRONMENT			
rivers/lakes	A review of aerial photography and mapping indicated 30 potential watercourses in the study area. Of these, sixteen watercourses were identified in the field. The proposed alignment crosses the West and South Rivers.	<ul style="list-style-type: none"> ▪ JWEL Field survey (2002) ▪ 1:20,000 NTS ▪ 1:10,000 aerial photographs 	<i>Fisheries Act</i> <i>Navigable Waters Protection Act</i> <i>Nova Scotia Environment Act</i>
significant fish habitat	DFO has identified the following significant fish habitat in and around the study area: <ul style="list-style-type: none"> ▪ The study area contains five major salmon streams and ten trout streams. Fisheries supported in this area include Native food fisheries, gaspereau, rainbow trout, brook trout, striped bass, smelts and eels. ▪ Brierly Brook has been the subject of a five year pilot project in restoration of spawning areas and rearing habitat for Atlantic Salmon and Brook Trout. 	<ul style="list-style-type: none"> ▪ C. MacInnis, pers. comm. (1997) ▪ JWEL Field survey (2002) ▪ Neill and Gunter Ltd. (2001) 	<i>Fisheries Act</i>

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	<ul style="list-style-type: none"> ▪ The West River and Brierly Brook systems have the highest juvenile salmon densities per unit area of any watershed in the Maritimes with salmon spawning being evenly distributed throughout the study area. ▪ The West River has also been the recipient of restoration work over the last eight years. ▪ South River supports a very diverse fishery for Atlantic Salmon, sea trout, brown trout, rainbow trout, striped bass, gaspereau and others. <p>Section 5.3.2 presents electrofishing results and reported species in the stream crossings of the RoW.</p>		
flood plain	The Flood Risk Map (1984) for the region shows that the alignment along the West River is designated as a 1:20 year floodway. The limits of floodway are approximately 150 m on the east side of the river and less than 50 m on the west bank. The alignment is at the southern limit of flood mapping. There are flood plains associated with the South River as well.	<ul style="list-style-type: none"> ▪ Antigonish Area Flood Risk Map (1984) ▪ JWEL Field survey (2002) ▪ Neill and Gunter Ltd. (2001) ▪ Aerial photographs 	<i>Municipal Government Act - Statement of Provincial Interest Regarding Flood Risk Areas.</i>
MARINE ENVIRONMENT			
marine habitat	None present in study area.	<ul style="list-style-type: none"> ▪ JWEL Field survey (2002) ▪ Aerial photographs 	N/A
salt marsh	The South River estuary north of the existing 104 is classified as a productive salt marsh.	<ul style="list-style-type: none"> ▪ C. MacInnis, pers. comm. (1997) ▪ Neill and Gunter Ltd. (2001) 	N/A
CROWN LANDS			
provincial parks	None present in study area.	<ul style="list-style-type: none"> ▪ J. Armstrong (1997) ▪ 1:10 000 mapping 	N/A
national parks	None present in study area.	<ul style="list-style-type: none"> ▪ 1:50 000 NTS mapping 	N/A
federal lands	No federal lands present in undeveloped areas of the study area.	<ul style="list-style-type: none"> ▪ G. Reid, pers. comm. (1997) 	N/A
park reserves	None present in study area.	<ul style="list-style-type: none"> ▪ J. Armstrong (1997) ▪ D. MacKinnon (1997) 	N/A
NATIVE LANDS			
Indian reserves	None present in study area	<ul style="list-style-type: none"> ▪ 1:50 000 NTS mapping 	N/A
Native land claims	None present in study area.	<ul style="list-style-type: none"> ▪ J. Powell, pers. comm. (1997) 	N/A
AGRICULTURE			
active agriculture	There are agricultural operations throughout the study area.	<ul style="list-style-type: none"> ▪ Aerial photography ▪ JWEL Field survey (2002) ▪ 1:10 000 mapping 	N/A
fur farms	There is one fox fur farm in the study area located north of the existing 104 in Lower West River.	<ul style="list-style-type: none"> ▪ M. Johnson, pers. comm. (1996) ▪ 1:10 000 mapping 	N/A
agricultural capability	The majority of soil within the study area has good agricultural capability for crop land.	<ul style="list-style-type: none"> ▪ Hilchey and Cann (1954) 	N/A

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FORESTRY			
intensive forestry management	None present in study area.	<ul style="list-style-type: none"> ▪ B. White, pers. comm. (1997) ▪ 1:10 000 mapping 	Nova Scotia <i>Wildlife Habitat and Watercourse Protection Regulations</i> Nova Scotia <i>Forests Act</i>
woodlot management	The are a number of actively managed private woodlots in the study area. There is a Stora Port Hawkesbury managed woodlot on Crown Land approximately one and half km south of the alignment east of Salt Springs.	<ul style="list-style-type: none"> ▪ C. Simpson, pers. comm. (1997) ▪ JWEL Field survey (2002) 	Nova Scotia <i>Wildlife Habitat and Watercourse Protection Regulations</i> Nova Scotia <i>Forests Act</i>
sugar bush	None present in the study area.	<ul style="list-style-type: none"> ▪ C. Simpson, pers. comm. (1997) 	N/A
LAND/WATER USE			
urban/rural development	The majority of the RoW crosses wooded land with some hay production or pasturage as well. Urban development is concentrated in the Antigonish area along the existing Highway 104 and in the Town. Many residences within the study area are concentrated along the existing Highway 104 and adjacent roads, such as Trunk 7, the Beech Hill Road and Route 316. There are some areas of residential development in proximity to the proposed alignment, particularly at Addington Forks Road, the mobile home park near the Oasis Motel, Dunn's Loop and Taylor Road.	<ul style="list-style-type: none"> ▪ NSTPW (2001a) ▪ JWEL Stakeholder consultations (2002) 	N/A
proposed development	The Municipal Planning Strategy for the study area shows the alignment area west of Taylor Road unplanned as far west as West River. The intersection of the planning area and the alignment begins around Route 7. The areas immediately adjacent to Route 7 are zoned as residential and commercial. The area of the alignment approximately 1 km north of Sommers Road, south of the existing Highway 104, east and north of the power line and approximately 2.5km west of Route 7 is zoned highway commercial. Proposed development included a development plan for a residential subdivision was recently submitted for a parcel of land (station 3+600) which will be severed by the alignment. A cemetery south of the existing highway had planned to expand further south. The owner is now planning an expansion to the east to accommodate the alignment.	<ul style="list-style-type: none"> ▪ S. Day, pers. comm. (1997) ▪ Town of Antigonish Municipal planning Strategy ▪ JWEL Stakeholder consultations (2002) 	
airports and navigational aids	None present in study area.	<ul style="list-style-type: none"> ▪ R. Lynch, pers. comm. (1994) ▪ Field reconnaissance 	N/A
landfills/waste disposal sites	The Beech Hill landfill is located south of the study area (NTS 1:50000 grid reference 805465).	<ul style="list-style-type: none"> ▪ 1:50 000 NTS mapping ▪ D. Shea, pers. comm. (1997) 	N/A
strip mines	None present in study area.	<ul style="list-style-type: none"> ▪ D. Hopper, pers. comm. (1997) ▪ Field reconnaissance 	N/A
surface facilities of active underground mines	None present in study area.	<ul style="list-style-type: none"> ▪ D. Hopper, pers. comm. (1997) 	N/A
underground mines	None present in study area.	<ul style="list-style-type: none"> ▪ D. Hopper, pers. comm. (1997) 	N/A

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pits and quarries	None present in study area.	<ul style="list-style-type: none"> ▪ D. Hopper, pers. comm. (1997) ▪ 1:50 000 NTS mapping 	Nova Scotia <i>Environment Act</i> Nova Scotia Pit and Quarry Guidelines (NSDOE 1999)
advanced mineral exploration claims	Mineral claims have been staked for kaolin clay and limestone	<ul style="list-style-type: none"> ▪ D. Hopper, pers. comm. (1997) 	N/A
petroleum exploration	Seismic programs conducted in Antigonish area in 2001 or 2002. Exploration well (Beech Hill #1) drilled in 2003 (abandoned).	<ul style="list-style-type: none"> ▪ P. Harvey, pers. comm. (2004) 	Nova Scotia <i>Environment Act</i> Nova Scotia <i>Petroleum Resources Act</i>
navigable waters	West River and South River are Navigable Waters.	<ul style="list-style-type: none"> ▪ 1:50 000 NTS mapping ▪ Aerial photographs ▪ NSTPW (2001a) 	N/A
aquaculture	None present in study area.	<ul style="list-style-type: none"> ▪ Sweeney, C. R. pers. comm. (1996) ▪ Nova Scotia Department of Agriculture and Fisheries (2002) 	N/A
recognized views	None present in study area.	<ul style="list-style-type: none"> ▪ NSTPW (2001a) 	N/A
RECREATION			
canoe route	None present in study area.	<ul style="list-style-type: none"> ▪ Trails Nova Scotia (2002) 	N/A
cross country ski trails	None present in study area.	<ul style="list-style-type: none"> ▪ Trails Nova Scotia (2002) 	N/A
hiking trails	None present in study area.	<ul style="list-style-type: none"> ▪ J. Armstrong pers. comm. (1997) ▪ Trails Nova Scotia (2002) 	N/A
miscellaneous recreation	There are recreational facilities at the following locations within the study area: The Oland Centre, skating rink and auditorium at St. Francis Xavier University; the Antigonish Arena; the Antigonish Fire Hall; the Community Centre/Daycare; the Lower South River Ballfield. Snowmobile trails are located north of the existing Highway 104 by the Shopping Centre and vary from year to year. Recreational fishing occurs on the West and South Rivers.	<ul style="list-style-type: none"> ▪ K. Proctor, pers. comm. (1997) ▪ S. Day, pers. comm. (1997) ▪ C. MacInnis, pers. comm. (1997) ▪ M. Pulsifer, pers comm. (1997) 	N/A
WATER SUPPLY			
surface water supply	None present in study area other than a small, non-potable, surface water reservoir in use at MacEachern Collision Centre.	<ul style="list-style-type: none"> ▪ NSTPW (2001a) ▪ JWEL Field survey (2002) 	Nova Scotia <i>Environment Act</i> Nova Scotia <i>Health Act</i> <i>Guidelines for Canadian Drinking Water Quality</i>
groundwater supply	Groundwater is used for individual well water supplies in the area and there is a municipal water supply wellfield with six production wells in the Lower South River area. The proposed alignment passes through the outermost protection zone of the wellfield.	<ul style="list-style-type: none"> ▪ D. Shea, pers. comm. (1997) ▪ B. Farrell, pers. comm. (1997) ▪ NSDOE Well Driller Logs ▪ JWEL Field survey (2002) 	Nova Scotia <i>Environment Act</i> Nova Scotia <i>Health Act</i> <i>Guidelines for Canadian Drinking Water Quality</i>
developed springs	None present in study area.	<ul style="list-style-type: none"> ▪ NSTPW (2001a) 	N/A
UTILITIES			
power transmission lines	There are multiple NSPI power transmission (69 kV and over) and distribution (69 kV) lines in the study area. NSPI lines will cross the proposed RoW north east of Addington Forks Road, just west of Kell Road and south west of MacEachern Loop.	<ul style="list-style-type: none"> ▪ NSTPW (2001a) ▪ 1:50 000 NTS mapping 	N/A

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municipal services	<p>Water lines follow the current South Side Harbour Road north of Highway 104 up to the approximate location of the railroad crossing. Water lines are in place along the Highway 4 approximately 1.5 km north of Highway 104 extending for about 1 km. There is a short section of water lines that are installed along the Lower West River Road from where it joins Trunk 7 to west to the small road extending north where it turns north toward the power line and joins the water and sewer line. There is an approximate 1.5km section of water line that extends south at the junction of Addington Forks Road and Route 104.</p> <p>Water and sewer lines are present adjacent to the 104 from approximately 1 km east of Route 316 to the Dunmore Road. These lines are also installed along Highway 4 from the 104 heading northwest into Antigonish and extending less than 1km north on Williams Point Road, south on Beech Hill Road and north and south on Timothy Lane. There are also lines on Cunningham Road south to approximately where the power transmission lines intersect the road. Water and sewer lines are in place on either side of Trunk 7 from the mobile home park up to and along Highway 104, west to Sommers Road where they extend less than 1km.</p> <p>There is a sewer line that extends from the end of the water and sewer line on Sommers Road, loops west back down to approximately MacIsaac Road, back north just west of North Street and ends south of the mobile home park where a very short segment of water and sewer line tees off to the east.</p>	<ul style="list-style-type: none"> ▪ K. Proctor, pers. comm. (1997) ▪ G. Ho, pers. comm. (1997) 	N/A
telecommunications towers	There is one tower in the study area.	<ul style="list-style-type: none"> ▪ J. Thiessen, pers. comm. (1997) 	N/A
telephone lines/fibre optic cable	<p>The RoW will intersect telephone lines in numerous places; aerial cable lines every road crossing the alignment. Aerial fibre optics extend from Antigonish Centre to Route 4, south to Highway 104 where the lines continue along the highway to Heatherton. Aerial fibre optics and cable are also in place along the Beech Hill Road as far south as Beech Hill where the power line intersects the road. Just north of the alignment, west of Beech Hill Road, aerial fibre optics follow the power line to join up on Cunningham road where the lines continue up to the Highway (104) and extend north of the 104 on Church Street past the shopping centre.</p> <p>Buried fibre optics follow the power transmission lines from Salt Springs Brook northeast to Lower South River where the lines continue east to Heatherton. Buried cable is found in a few places within the study area. A very short segment is buried at the end of Willowdale Lane south of the silo and another similar size segment crosses Highway 104 immediately west of the Beech Hill Road between the highway and the power line to the south. Other buried cable is found at various locations off Trunk 7. A short (<0.5km) segment is buried east of Trunk 7 less than 1km south of the West River bridge. A larger section of buried cable begins approximately 0.5km down the Cameron Kinney Hill Road, continues up to Trunk 7 and goes south past Salt Springs Brook and follows the next road to the south down to the transmission lines.</p>	<ul style="list-style-type: none"> ▪ L. MacKinnon, pers. comm. (1997) ▪ 1:50 000 NTS mapping 	N/A
cable television lines	It is unknown if there is buried cable in the study area.	<ul style="list-style-type: none"> ▪ NSTPW (2001a) 	N/A

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miscellaneous pipelines/cables	There are no pipelines/cables in the study area.	<ul style="list-style-type: none"> ▪ NSTPW (2001a) 	N/A
active railway lines	The active railway lines within the study area around South River station but do not intersect the alignment.	<ul style="list-style-type: none"> ▪ NTS 1:50 000 mapping ▪ JWEL Field survey (2002) 	N/A
ARCHAEOLOGY/HERITAGE			
national historic sites	None present in study area.	<ul style="list-style-type: none"> ▪ R. Thompson, pers. comm. (1997) 	N/A
heritage properties	<p>There are no registered heritage sites along the alignment. The registered heritage properties in proximity to the project are along Church Street north of Highway 104.</p> <p>Three heritage features were identified during JWEL field investigations; namely a rock mound (3+900), a rock wall (4+100) and a dilapidated house (10+540). The house was of moderate significance while the rock pile and the rock wall were low.</p> <p>A bridge footing believed to be from an 1853 crossing of the South River was found during the South River Impact Study investigation. The footing is of low significance.</p>	<ul style="list-style-type: none"> ▪ G. Ho, pers. comm. (1997) ▪ K. Proctor, pers. comm. (1997) ▪ W. Brown, pers. comm. (1996) ▪ JWEL Field survey (2002) ▪ Neill and Gunter Ltd. (2001) 	N/A
archaeological sites	The Nova Scotia Museum has no records of reported archaeological sites or of rare or significant fossils within the study area. No archaeological sites were encountered during field investigations.	<ul style="list-style-type: none"> ▪ R. Ogilvie, pers. comm. (1997) ▪ JWEL Field survey (2002) ▪ Neill and Gunter Ltd. (2001) 	<p><i>Nova Scotia Heritage Property Act</i></p> <p><i>Nova Scotia Special Places Protection Act</i></p>
old burial grounds/cemeteries	There is an old cemetery located just north of the alignment in the vicinity of station 10+900 and another located just north of the alignment around station 4+700. Neither of the cemeteries is within the study area.	<ul style="list-style-type: none"> ▪ 1:50 000 NTS mapping ▪ NSTPW. (2001a) ▪ JWEL Field survey (2002) ▪ Neill and Gunter Ltd. (2001) 	<i>Nova Scotia Cemeteries Protection Act</i>
heritage rivers	None present in study area.	<ul style="list-style-type: none"> ▪ J. Armstrong pers. comm. (1997) ▪ NSDEL 2002c 	N/A
AIR QUALITY			
air quality	No heavy industry present. Generally good air quality due to maritime climate and small population base. Occasional long-range transport of air masses from central Canada or the Eastern seaboard may cause poorer air quality from transported contaminants.	<ul style="list-style-type: none"> ▪ NSDOE (1998) 	<p><i>Canadian Environmental Protection Act - Ambient Air Quality Objectives</i></p> <p><i>Nova Scotia Air Quality Regulations</i></p>
NOISE			
ambient noise	The values recorded at all baseline locations demonstrate typical levels expected in rural communities and outlying homes. The main sources of noise noted during the survey were traffic along the existing Highway 104 or local roadways, and normal residential outdoor activity.	<ul style="list-style-type: none"> ▪ JWEL Field survey and baseline sampling (2002) 	<i>NSDOE Guidelines for Environmental Noise Measurement and Assessment (1989)</i>
PUBLIC INTEREST			
public interest	Three public consultation open houses were held in Antigonish, in 1997, 1998 and 2001. Although there was general consensus regarding the need for the project, there is mixed public reaction on the proposed design and alignment as well as compensation issues.	<ul style="list-style-type: none"> ▪ NSTPW (2001a) 	N/A

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WEATHER/CLIMATE			
weather/climate	Mean temperatures range from 18.2 C in July to -6.6 C in January and February. Approximately 35 days with measurable snowfall per year (<i>i.e.</i> , =>0.2 cm), totalling 208 cm; approximately 108 days with measurable rainfall per year (<i>i.e.</i> , =>0.2 mm), totalling 1175.7 mm (Collegeville, NS).	<ul style="list-style-type: none"> ▪ Environment Canada (2002) 	N/A
TRANSPORTATION NETWORK			
transportation network	The proposed Highway 104 alignment is located in Antigonish County, in the Northern portion of the province, stretching approximately 15 km from Addington Forks to Taylor Road. Current traffic volumes range from 1000 to 15000 vehicles per day (vpd) in the study area. The upgrading of this stretch will see the continuation of the 100 series four-lane, divided controlled access highway from Amherst through to Antigonish. Presently motorists using the existing Highway 104 are a mix of local and through traffic. Some of the routes carrying traffic to the existing highway include Trunk 4, Trunk 7, Beech Hill Road and Route 316.	<ul style="list-style-type: none"> ▪ NSTPW (2001a) 	N/A

Personal Communications Undertaken by NSTPW for Highway Environmental Database Screening and included in Table C1:

Armstrong, J.V. Planning Technician, Parks and Recreation Division, Nova Scotia Department of Natural Resources, March 19, 1997
Brown, W. Head of Heritage, Municipal Services Division, Nova Scotia Department of Housing and Municipal Affairs, Halifax, NS December 20, 1996
Day, S. Town Planner, Town of Antigonish, Antigonish, NS January 10, 1997
Dupuis, M. Manager of Commercial Development, Airports Division, Transport Canada, Moncton, NB, December 4, 1996
Farrell, B. Municipality of the Town of Antigonish, Antigonish, NS April 4, 1997
Fraser, G. Crown Land Forester, Nova Scotia Department of Natural Resources, Amherst Nova Scotia January 29, 1997
Gautreau, R. Canadian Wildlife Service, Atlantic Region, Sackville, New Brunswick February 12, 1997
Ho, G. Planner, Municipality of the County of Antigonish, Antigonish, NS January 10, 1997
Hopper, D.B. Land Use Planner, Department of Natural Resources, Halifax, Nova Scotia, March 18, 1997
Hubley, M. Regional Superintendent, Navigable Waters Protection, Maritime Region, Canadian Coast Guard, Department of Fisheries and Oceans Canada, Dartmouth, NS November 22, 1996
Johnson, M. Fur Farm Technician, Animal Industry Branch, Nova Scotia Department of Agriculture and Marketing, Truro, NS December 2, 1996
MacInnes C. Area Habitat Coordinator Gulf Region, Department of Fisheries and Oceans, Nova Scotia February 07, 1997
MacKinnon, D. Ecological Planner, Protected Areas Division, Nova Scotia Department of Environment, Belmont, NS February 27, 1997
MacKinnon, L. Maritime Tel&Tel, New Glasgow, NS January 8, 1997
Ogilvie, R. Curator, Special Places, Nova Scotia Museum, Halifax, N.S., February 21, 1997
Powell, J., Lands Officer, Indian and Northern Affairs Canada, Atlantic Region, Amherst, Nova Scotia, February 28, 1997
Proctor, K. Town Engineer, Town of Antigonish, Antigonish NS, January 10, 1997
Pulsifer, M. Regional Biologist, Nova Scotia Department of Natural Resources, Antigonish, NS, February 26, 1997
Reid, G., Land Surveys and Inventories, Public Works Canada, Halifax, NS March 10, 1997
Shea, D. Public Health Engineer, Nova Scotia Department of the Environment, Antigonish, NS December 16, 1996
Sweeney, C.R. Aquaculture Development Officer, Nova Scotia Department of Fisheries, Halifax, NS December 3, 1996
Theakston, J. Environmental Engineer, Ecosystem and Risk Management Branch, Nova Scotia Department of Environment, Halifax, NS. December 2, 1996
Thiessen, J. Manger, Spectrum, Industry Canada, Dartmouth NS, February 27, 1997
Thompson, R. Head, Historic Sites Planning, Parks Canada, Halifax, N.S. March 12, 1997
White, B. Manager Reforestation, Forestry Division, Nova Scotia Department of Lands and Forests. Truro, NS January 5, 1997
Wile, J. Area Biologist. Ducks Unlimited Canada. Amherst, NS November 28, 1996

Note: Refer to Section 13 of the Environmental Assessment Report for remainder of references.