NOVA SCOTIA

Nova Scotia Civic Address Users Guide

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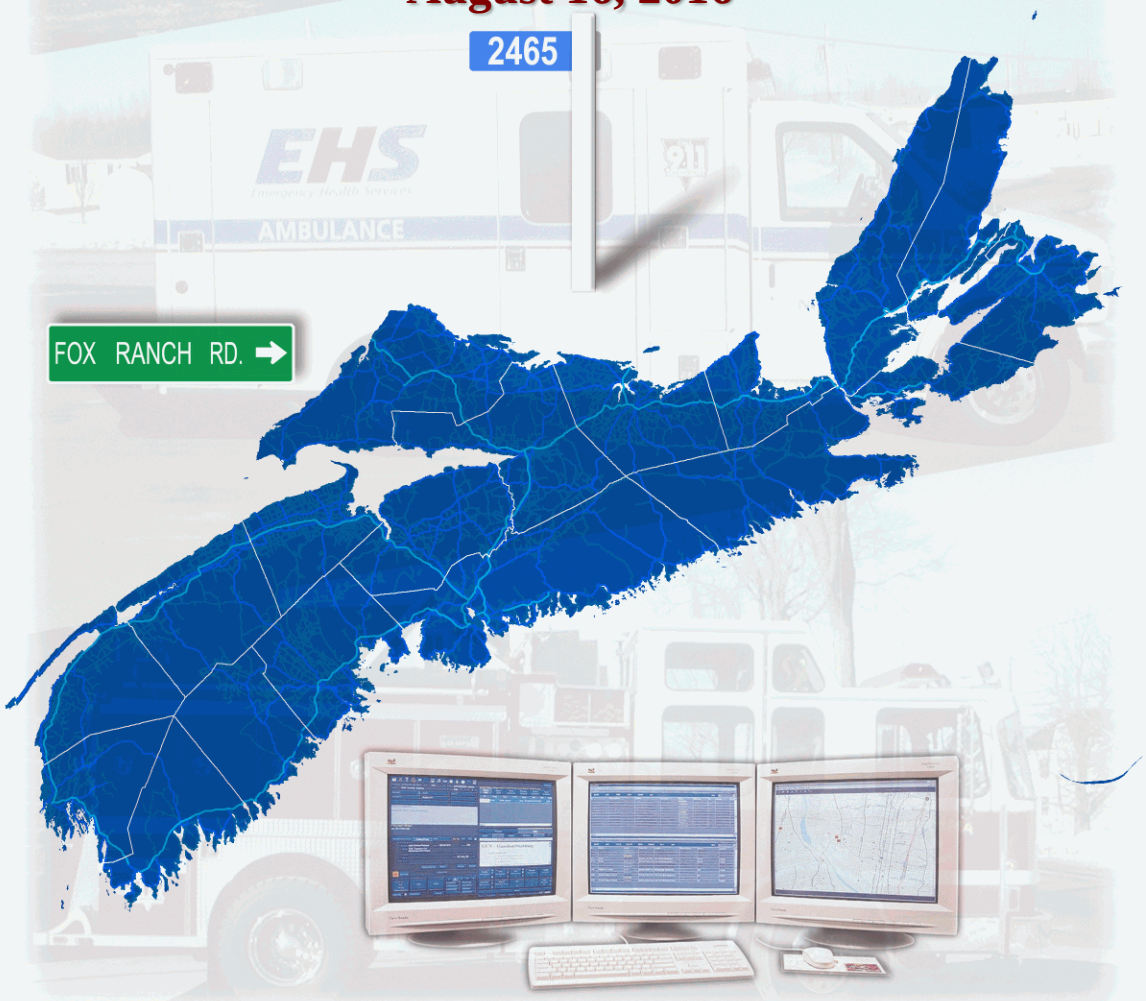


PREFACE

This Users Guide is intended for anyone involved with civic addressing in Nova Scotia. It was developed with the cooperation of various government departments and municipalities.

This document provides information on the civic addressing system and guidance on resolving issues - It is not intended to impose rules, merely to suggest options. While it is hoped that the approach to civic addressing is consistent throughout the province, it is recognized that deviations will always occur.

Civic addressing serves primarily to provide efficient emergency services to the public. The civic addressing system is comprised of legislation, physical infrastructure, databases, data management systems, and most of all the contribution of various agencies; all of these work together to ensure the efficient delivery of emergency services. The civic addressing system continues to evolve, and likewise this document will evolve to reflect changes in the system and to provide additional detail where required.

Nova Scotia has revised the approach to civic addressing in part through the development of the Nova Scotia Civic Address File (NSCAF). This map based database moves beyond the traditional approach to using a Master Street Address Guide (MSAG) as the *foundation* for 911 services and provides the "next generation" of addressing.

The success of this new civic addressing system is credited to the efforts of many people and agencies. Municipalities and their staff from across the province have been instrumental in helping build the NSCAF. It is also recognized that the overall long term success of this program will lie within the municipalities, First Nations, and provincial government departments and agencies to ensure that new roads, road signs, civic numbers and community boundaries, and any revisions to these responsibilities, are kept up to date.

As well, there has been considerable effort of staff from the Emergency Management Office (EMO), the Department of Transportation and Infrastructure Renewal (TIR) and Service Nova Scotia and Municipal Relations (SNSMR) in building the NSCAF. Significant contributions from all the stakeholders have helped build the system, and their continued input will allow the system to thrive.

Table of Contents

1 INTRODUCTION

1.1 Purpose and Scope

Civic addressing is more than community names, street signs and numbers on houses. It is a comprehensive system that involves numerous components including the public, municipalities, First Nations communities, Emergency Management Office (EMO), Transportation and Infrastructure Renewal (TIR), Service Nova Scotia (SNS), Municipal Relations (MR), Property Valuation Services Corporation (PVSC), emergency response agencies, telephone service providers, and many others.

The primary mandate of civic addressing is to support emergency response services. To fulfill this, the data must be complete and accurate. The data must also be available to service the needs of the other integrated users.

Another important mandate of civic addressing is to facilitate the true source of mailing addresses for properties in Nova Scotia. This is accomplished by the Single Address Initiative (SAI) services, now referred to the NSCAF Uplink Service. The NSCAF Uplink Service is used to maintain and support delivery of accurate and up-to-date mailing and civic address information to the multiple organizations, stakeholders and clients.

Nova Scotia has developed an integrated civic addressing system that extends well beyond simple addressing needs. It is used by multiple government departments that require both address information and mailing information, and is integrated into provincial, municipal, and federal mapping programs. This approach stems from the provincial GeoNova program that strives to collect data as close to the source as possible and share it with as wide an audience as possible**.**

Civic address data are available through the Nova Scotia Civic Address File (NSCAF). This centralized geographic database is used to standardize the format and availability of these data in the province. The graphic approach to civic addressing has been pretty well adopted in all other jurisdictions throughout the province, but is essential to meet the needs of wireless communications and to fulfill the other requirements on civic addressing. The NSCAF supports both point and range based addressing. Point based addressing, also known as the “next generation” of addressing and permits precise mapping with the inclusion of more civic address attributes than are possible with range based systems.

This Users Guide builds on the previous civic addressing work in the province, and aids in working with the revised and expanded civic addressing system. It is intended primarily for municipalities and First Nations communities, but is also useful to PSAP call takers, emergency responders, and any other users of civic address data in Nova Scotia.

1.2 Civic Addressing in Nova Scotia

Civic addressing has existed in Halifax and other urban areas of Nova Scotia for well over one hundred years. The province of Nova Scotia was a leader in developing a civic addressing system to support the E-911 system. Due to the scope of the project, a contractor was hired to develop the database and then, through a series of negotiations, the fifty-five municipal units agreed to take on the maintenance.

Some municipalities developed civic addressing bylaws, policies, and guidelines to standardize the application of civic addressing and to help ensure compliance. Each municipal agency handled maintenance of the data in their own way. Some used digital mapping and technology to assist them, and others continued to utilize paper maps.

In 1997, the GeoNova Advisory Committee identified the need for a digital, geo-referenced civic address database, referred to as the NSCAF (Nova Scotia Civic Address File). The NSCAF would provide a standard, geo-referenced digital database of civic addresses province-wide.

In 1997/98, the then Department of Housing and Municipal Affairs (DHMA) retained a consultant to develop a technical concept and strategy for the creation of the NSCAF that would support the delivery of emergency services as well as other applications. This concept and resulting strategy were based on principles of maximizing the use of existing provincial and municipal data, so that the NSCAF would be developed and maintained as cost effectively as possible.

In 1998/99, a pilot project was conducted based on this NSCAF Conceptual Report. A data model was developed, and a NSCAF database was built for the pilot area using this data model. In addition, a data maintenance process was conceptualized, and a set of policies, procedures, and guidelines to support the province-wide implementation were compiled. Many recommendations were also included in the final report that was used to assist and guide the province-wide implementation. The pilot project used resources, assistance, and ideas from many agencies at both the provincial and municipal levels.

These activities lead to the province-wide building of the NSCAF, which launched in 2000/ 2001.

The NSCAF is only one component of the civic addressing system. The initial steps required to build the system have involved legislation, road signage, civic number signage, and data collection. These initiatives required extensive cooperation between Emergency Management Office (EMO), municipalities, Transportation and Infrastructure Renewal (TIR), Service Nova Scotia and Municipal Relations (SNSMR), and other departments and agencies. Initiatives are ongoing to resolve issues in the implementation of the system. Cooperation of the provincial departments, municipalities, and the citizens of Nova Scotia are required to ensure the system continues to function effectively.

In 2011/2012, the Minister of SNSMR, the Board Chair of the PVSC and the President of the Union of Nova Scotia Municipalities (UNSM) agreed to establish the Property Innovation Council. The Property Innovation Council serves as the central authority for addressing cross organizational opportunities and challenges relating to the delivery of property services.

The Single Address Initiative (SAI) is the first project that the Property Innovation Council decided to pursue. The focus of this project was to identify a solution to improve collective methods for sharing accurate and timely civic and mailing addressing information between the multiple organizations, stakeholders and clients.[1] Thus, the SAI services were created and are made up of two services: a mailing address service and a civic address service.

The Mailing Address Service is a new service that has been created to support the flow of mailing address data for property interest holders between and among Service Nova Scotia, the PVSC and Municipalities. It is expected that over time most, perhaps all, Nova Scotia Municipalities will connect to the Mailing Address Service.

The Civic Address Service is a significant enhancement to the existing NSCAF system. The key enhancements are to provide a web service for data providers to more easily and effectively share their civic address data with the NSCAF as well as a refinement of the NSCAF data structure to align with new data standards that have been adopted as part of the SAI project. The expectation for the Civic Address Service is that it will be the data transfer mechanism used by Municipalities that have or create their own internal civic address system.

The Civic Address Service publishes a set of standard web services that allow organizations to add, update, search for and get current Nova Scotia civic address information (attribute and shape data). [2]

In the spring of 2014 the SAI Web Services was renamed because the SAI name was no longer relevant for the context of the web service. Therefore, the name NSCAF Uplink Service was chosen as its replacement. The NSCAF Uplink Service functions in the same manner as the SAI. That is, it continues to offers both services to participation municipalities.

[1] Source: https://sites.google.com/site/propertyinnovationcouncil/current-projects/single-address-initiative

[2] Source: Property Innovation Council

ACTS, REGULATIONS, AND BYLAWS

The following sections provide selected details on the legislation used to implement civic addressing in Nova Scotia. Multiple provincial government departments, municipalities, and First Nations communities have legislation pertaining to civic addressing and in some cases, there are conflicting or overlapping responsibilities.

1.3 Emergency "911" Act

The primary enabling legislation for 911 services and civic addressing is through the Emergency "911" Act. (1992, c. 4, s. 1.) available at http://nslegislature.ca/legc/statutes/emerg911.htm. It defines the role of the Emergency Management Office and enables the Governor in Council to make regulations for posting of civic addresses.

It enables town councils to "*...assign or cause to be assigned civic numbers to buildings and for that purpose may name or rename any public or private street, road or lane.*" by an amendment to the ***Towns Act*** and "*A council may assign or cause to be assigned civic numbers to buildings.*" by an amendment to the ***Municipal Act***. The ***Towns Act*** and ***Municipal Act*** have been repealed and replaced with the ***Municipal Government Act***, although these clauses have been incorporated into this new Act as discussed in Section 2.4.

The requirement to work cooperatively with the municipalities is recognized in the Responsibilities of the Minister for "*providing, in co-operation with a regional municipality, incorporated town or rural [municipality], the overall management, direction, co-ordination and support for the development and implementation of the system*".

1.4 Motor Vehicle Act

Signage for highways is legislated in the ***Motor Vehicle Act*** (R.S., c. 293, s. 1.) available at http://nslegislature.ca/legc/statutes/motorv.htm. It defines the role of the Provincial Traffic Authority and authorizes the appointment of a traffic authority for a city or town.

As defined in Section 86, subsections (12) and (13), "*a local traffic authority has jurisdiction for all highways within a city or town, except where the highway is a main travelled or through highway (as determined by the Minister.)*". The Act defines a highway in Section 2 (u) as "*(i) a public highway, street, lane, road, alley, park, beach or place including the bridges thereon, and (ii) private property that is designed to be and is accessible to the general public for the operation of a motor vehicle;*". Section 87, subsection 1 states that the "*... Department is hereby authorized to classify, designate and mark all highways lying within the boundaries of the Province and to provide a uniform system of marking and signing the highways under the jurisdiction of the Province.*"

The Traffic Signs Regulations (N.S. Reg. 47/2001 (April 30, 2001)) specifies the format for signage such as stop signs, yield signs, and school crosswalk signs, but do not provide any standards for road name signs.

1.5 Public Highways Act

The authority of Transportation and Infrastructure Renewal to manage provincial roads is provided in the ***Public Highways Act*** (R.S., c. 371, s. 1.) available at http://nslegislature.ca/legc/statutes/pubhighw.htm. It states in Section 3 that "*This Act applies to all highways within the Province not included within the boundaries of a city or town or owned by a municipality, and does not, except where expressly provided, apply to highways within the boundaries of cities or towns or owned by a municipality.*" and in Section 4 that "*The Minister has the supervision, management and control of the highways and of all matters relating thereto*". TIR interprets this authority as extending to the naming of roads under provincial jurisdiction.

1.6 Municipal Government Act

Municipal jurisdiction for civic addressing is provided by the ***Municipal Government Act*** (1998, c. 18, s. 1.) available at http://nslegislature.ca/legc/statutes/muncpgov.htm. It reiterates the authority of the provincial and municipal traffic authorities as follows:

"*311 (1) In this Section, "highway" and "Provincial Traffic Authority" have the same meaning as in the Motor Vehicle Act.*
(2) The council may, by policy, appoint a traffic authority for all or part of the municipality.
(3) A traffic authority has, within the municipality, the powers of a traffic authority of a city or town pursuant to the Motor Vehicle Act.
...
(7) The Provincial Traffic Authority has, with respect to
(a) highways vested in Her Majesty in right of the Province;
(b) highways in areas of a municipality for which there is no traffic authority; and
(c) highways in a municipality that have been designated by the Minister of Transportation and Public Works as main travelled or through highways, the powers conferred upon a traffic authority by or pursuant to the Motor Vehicle Act.
(8) The traffic authority for a municipality has, with respect to highways in the municipality, excluding those for which the Provincial Traffic Authority has authority, the powers conferred upon a traffic authority by or pursuant to the Motor Vehicle Act."

It defines a municipality as "*...a regional municipality, town or county or district municipality, except where the context otherwise requires or as otherwise defined in this Act;*", and a street as "*...a public street, highway, road, lane, sidewalk, thoroughfare, bridge, square and the curbs, gutters, culverts and retaining walls in connection therewith, except as otherwise defined in this Act;*"

The authority of councils to implement civic addressing and to rename streets is provided as follows:

"*313 (1) The council may*
(a) by by-law, adopt a system for assigning civic numbers to buildings;
(b) by by-law, require owners or occupiers of property to post the correct civic number prominently on their properties, with power to prescribe the size, design and location of the civic number that the owner or occupier is so required to post, and the manner in which it is posted;
(c) by policy, name or rename any street or private road;
(d) post the name of any street or private road, including posting the name on private property;"

Note: The Municipal Government Act has been recently revised to remove the word "building" as it relates to the assignment of civic addresses. The purpose of this change is to allow sports fields, trails, and other locations to be addressed. This change also conforms with the EMO recommendation to broaden civic addressing to encompass these features.

1.7 Building Code Act

The Nova Scotia Building Code Regulations under Section 4 of the ***Building Code Act*** (R.S.N.S. 1989, c. 46) has a provision to withhold an occupancy permit until a civic number is posted. In Section 1.4.1 *Permits* it states:

"*(4) The authority having jurisdiction may, if applicable, withhold an occupancy permit*
(a) until satisfied that there is a valid electrical permit issued by the electrical authority having jurisdiction,
(b) until satisfied that the civic address is posted where a municipality has so provided by by-law, in accordance with Section 313 of the Municipal Government Act."

This can be helpful to ensure compliance, but the regulation notes that this condition is only applicable where the municipality has a civic addressing bylaw.

1.8 Civic Addressing Bylaws

Civic addressing bylaws are used by some municipalities in the province to standardize civic addresses and private road signs, assign and change civic numbers, and to ensure that civic numbers are posted. Many municipalities rely on guidelines and policies only, usually due to the cost and human resources required to enforce such a bylaw. In the case of HRM, the civic addressing policies are included in an Administrative Order.

Civic address bylaws generally have similar content. They define roles and responsibilities for a civic addressing officer, how existing civic numbers are integrated, and the requirements of the public to post civic numbers. They usually specify the format of the sign and where it should be posted. Many municipalities thought out the Province have adopted civic address bylaws. These bylaws are usually available on the internet and can be view at the municipality's website.

Table 1 Selected Municipal Civic Addressing Bylaws, Policies, and Guidelines

Municipality	Civic Addressing Documentation URL
Town of Amherst	http://www.amherst.ca/component/option,com_docman/Itemid,673/gid,474/task,doc_download/
Municipality of the County of Annapolis	http://annapoliscounty.ca/government/bylaws/24-s10-civic-address-bylaw
Municipality of the County of Antigonish	http://www.antigonishcounty.ns.ca/Bylaws/CivicAddressingBylaw.pdf
Town of Bridgewater	http://www.bridgewater.ca/images/documents/approved%20civic%20address%20guidelines.pdf
Cape Breton Regional Municipality	http://laserfiche.cbrm.ns.ca/weblink7/DocView.aspx?id=4667&dbid=4
Municipality of the District of Chester	http://www.chester.ca/planning/civic-address-numbers.html
Municipality of the County of Cumberland	http://www.cumberlandcounty.ns.ca/civic-address.html
Municipality of East Hants	http://www.easthants.ca/content/civic-addressing-bylaw-feb-11/Appendix%20A%20-%20Civic%20Addressing%20By-Law%20Number%20163.pdf
Municipality of the District of Guysborough	http://www.municipality.guysborough.ns.ca/sites/default/files/Bylaws/Civic%20Addressing%20By-Law.pdf
Halifax Regional Municipality	http://www.halifax.ca/legislation/bylaws/hrm/documents/By-LawC-300.pdf
Municipality of the County of Kings	http://www.county.kings.ns.ca/upload/All_Uploads/Bylaws/Civic%20Address%20By-law%2096.pdf
Town of Lunenburg	http://www.explorelunenburg.ca/index.php?option=com_docman&task=doc_download&gid=135&Itemid=156
Municipality of the District of Lunenburg	http://www.modl.ca/municipal_services_-_planning_and_development/civic-numbering.html
Town of New Glasgow	http://www.newglasgow.ca/images/stories/bylaws/Civic_Addressing_Bylaw.pdf
Municipality of the County of Pictou	http://www.county.pictou.ns.ca/images/stories/PDF/bylaws/Civic_Addressing.pdf
Region of Queens Municipality	http://www.regionofqueens.com/index.asp?id=65

Municipality	Civic Addressing Documentation URL
Municipality of the County of Richmond	http://www.richmondcounty.ca/images/pdf/council/bylaw/bl54.pdf
Town of Truro	http://www.truro.ca/component/option,com_docman/Itemid,455/gid,263/task,doc_details/
Municipality of the District of West Hants	http://www.westhants.ca/index.php?option=com_content&view=article&id=21&Itemid=131
Town of Yarmouth	http://townofyarmouth.ca/attachments/099_Civic_Addressing_By-law_No._58.pdf

Another useful resource when developing a civic addressing bylaw is the model bylaw included in the Nova Scotia Model By-Law Manual for Municipalities (Chapter 4) (broken link), published in April 2000. This document is also available on the Association of Municipal Administrators, Nova Scotia website (http://www.amans.ca/index.php?/projects-and-resources/ama-model-by-law-and-policy-manual.html) – Model Bylaw. The document focuses on civic numbers and signage and provides basic definitions of private roads and streets.

The Municipality of the District of Lunenburg civic addressing policy specifies the format and placement of private road signs, including diagrams for the proper placement of signs. Other municipalities provide similar specifications for signage of private roads. The Municipality of the District of Guysborough provides a detailed description for the placement of private road name signs as follows:

"*c. where permission is obtained in accordance with subsection (b), erect, maintain in good condition, and replace as necessary, a sign and signpost at the intersection of the private road and the street in a manner consistent with any conditions attached to such permission and other lawful requirements, and, except to the extent of any inconsistency with such conditions or other lawful requirements, in accordance with the following standards:*
I. lettering of the private road name to be not less than 100 millimetres in height, in upper case block letters;
ii. lettering to be in black against a white background;
iii. bottom of the lettering to be at least 2 metres above grade;
iv. signpost may be made of pressure treated lumber with cross-sectional dimensions not less than 85 millimetres by 85 millimetres or rigid non-ferrous metal and sufficiently fastened to the ground to hold the sign rigidly in place and to prevent turning of the sign in the wind;
v. to the extent possible, the signpost is to be located in an unobstructed line of sight for vehicles approaching the private road from either direction along the street and to be set back a minimum of 3.5 metres from the traveled portion of the street.."

1.9 Civic Addressing Policies

1.9.1 Road Naming

Transportation and Infrastructure Renewal has developed a road naming procedures and naming policy document (Nova Scotia Road Naming Procedure and Nova Scotia Road Naming Policy. October 2011). It includes requirements for road naming for proposed subdivisions, individual proposed roads, naming existing roads, and changing road names.

The document lists four guiding principles for road naming:

1. Avoid Duplication (within a Community and in adjacent Communities, except where road continues into an adjacent Community)
2. Avoid Confusion (avoid similar sounding names)
3. Establish Continuity (maintain the same name for the entire road)
4. Establish First Line of Contact (naming coordinated through municipalities)

The first three principles are also identified in the HRM Street Naming Guidelines using the terms Uniqueness, Distinctiveness, and Continuity. The fourth principle is intended to identify the municipality as the primary contact for road naming.

The document also includes evaluation criteria for naming roads, sample forms and letters, and recommends the creation of Heritage Names Lists and the establishment of a Road Naming Resolutions Committee. In addition, it identifies the reporting requirements to ensure that road name changes are disseminated to all necessary agencies.

The Municipality of County of Colchester has also developed a detailed system for managing road naming. Straightforward forms have been developed for most situations, including:

- Road name request (for municipal, private, and provincial roads);
- Name change request (for municipal, private, and provincial roads);
- Petition for road name change (by public).

Road naming policies and guidelines have also been developed by other municipalities, including the Municipality of the County of Annapolis and the Municipality of the District of West Hants.

1.9.2 Road Name Signage

TIR has standardized road signage through Policy Number PO1010 (Policy Guide Signing at Intersections) and Procedure Number PR5052 (Guide Sign Installation at Intersections). The procedure specifies the format and placement of road signs, and states that "*The legend used for ROAD NAMES must conform to the Provincial Road Listing Database. All road names must be spelled in full with no exceptions. The Road Listing Database also contains an approved list of suffix abbreviations that can be used.*"

It also standardizes the colour scheme of road signs as "*All Road Name signs (provincial or municipal) consist of a white message and border on a green background. Municipalities will be given the option of adding a symbol icon to identify their respective municipality. All "Private Road" name signs consist of black Scotch Cal Grade letters and border on a white Engineering Grade background.*"

As noted in Section 2.5, municipal civic addressing bylaws also typically specify the format and placement of road signage. In HRM many street signs are made by the HRM sign shop and posted by HRM. In other municipalities, the TIR sign shop makes and posts local street signs on behalf of the municipality.

1.9.3 Civic Number Signage

As noted in Section 2.5, municipalities have the jurisdiction for the format and placement of civic number signs. The specifications are noted in civic addressing bylaws or policies.

The description below is excerpted from the Nova Scotia Model By-Law Manual for Municipalities (Chapter 4).

"*8. The owner of a lot on which a building is located shall keep posted on the lot or building the assigned civic number in the following manner:*

(20) civic numbers shall be posted in a location which is not obstructed from view when viewed from the closest place on the traveled portion of the principal street or private road upon which the lot or building is situated or from which it has access and from all points in at least 10 metres in either direction from that place, except that an intervening tree trunk or a vertical pole or post shall not alone be considered an obstruction for purposes of this subsection;

(21) civic numbers shall face towards the street or private road upon which the lot or building is situated and which forms part of the civic address for the lot or building except that double-sided signage may be used, in which event the civic number shall be on both sides of the sign and perpendicular to the street or private road;

(22) civic numbers shall be in Arabic numerals;

(23) the bottom of the numerals shall be a minimum of [e.g. 1.2 meters] above grade;

(24) the colour of the numerals shall clearly contrast with the background upon which the numbers are displayed;

(25) the height of the numerals shall not be less than the following dimensions for the specified viewing distances measured from the place where the civic number is posted to the closest edge on the traveled portion of the principal street or private road upon which the lot or building is situated:

- *(a) viewing distance of 15 metres or less: minimum numeral height of 65 millimetres;*
- *(b) viewing distance of between 15 and 30 metres: minimum numeral height of 100 millimetres;*
- *(c) viewing distance of between 30 and 45 metres: minimum numeral height of 125 millimetres;*
- *(d) viewing distance of between 45 and 60 metres: minimum numeral height of 150 millimetres;*
- *(e) viewing distance of between 60 and 75 metres: minimum numeral height of 175 millimetres; and*
- *(f) viewing distance of between 75 and 90 metres: minimum numeral height of 200 millimetres;*

(26) where the viewing distance measured from the place where the civic number is posted to the closest edge of the traveled portion of the principal street or private road upon which the lot or building is situated is 15 metres or more, the sign shall be artificially illuminated at night to be visible from the street or road, except if there is no electrical service to the lot or building;

(27) in the event that

- *(a) a building is not located within 90 metres of the closest edge of the travelled portion of the principal street or private road upon which the building is situated;*
- *(b) the view of the civic number would be obstructed if it were posted on the building; or*
- *(c) for any other reason an owner does not post the civic number on the building the civic number shall be posted on a gatepost, signpost or other structure on the lot on which the building is situated, excluding a utility pole for electrical, telephone or other utility service, on the same side of the road, and at least 3.5 metres from the closest edge of the travelled portion of the street or private road upon which the building is situated.*"

HRM has incorporated wording similar to this model bylaw and has also extended it to include other issues as follows:

"***Existing Civic Numbering***

6. (1) A civic number that was posted on a property that was customarily in use on the date of adoption of this bylaw is hereby assigned to that property until and unless the Civic Addressing Coordinator, by written notice to the owner and occupant, otherwise directs.

Maintenance

7. The owner of a property shall maintain the civic number for the property in good order.

Prohibited Postings

8. (1) An owner shall not post or permit to be posted any part of a civic address which is not assigned to the property.

(2) An owner shall not display on a property any number which is not the assigned civic number with the exception of a lot number, unit number, or a number which is clearly part of a business name.

(3) No lot number, unit number, or suite number shall be posted without the word "lot", "unit" or "suite" proceeding the posted number."

Note that HRM does not use the word "building" when referring to civic addressing. This is beneficial since it broadens the application of civic addressing to recreational fields, communication towers, trails heads, and other locations that may not have a structure but still benefit from the assignment of civic addresses.

The Municipality of the District of Lunenburg, the Municipality of the County of Annapolis, and other jurisdictions have standardized on the common blue sign with white reflective lettering for civic number signage. These are especially useful in rural areas where setbacks are often greater than in urban areas, and visibility is often hindered, especially at night.

EMO also promotes the posting of civic numbers. Their web site (http://www.gov.ns.ca/EMO/AbsPage.aspx?id=1257&siteid=1&lang=1) includes tips on posting civic numbers and provides a list of suppliers for civic number signs in each municipality.

2 DESIGN AND CONSTRUCTION

This chapter describes how the components of the Civic Addressing System are assembled and managed to create a functional system. It starts with a description of each group responsible for its operation, and then describes the main components.

2.1 Responsible Authorities

A number of groups have responsibilities to ensure the operation of the civic addressing system, while there are many other groups that access the system.

2.1.1 Public

The public initiates the civic addressing process (either directly or through a subdivision process by way of a developer) and the system in turn serves the public for 911 services. Their initial involvement is in acquiring a civic address. This generally occurs in conjunction with a building permit or subdivision application. The permit is submitted to the local municipality, who also have jurisdiction for assigning civic numbers.

Individual property owners are responsible for posting their correct civic number. There are still a large number of buildings in the province that do not have a proper civic number sign posted. Municipalities sometimes legislate the requirement for posting civic numbers, but this is not always the case. Regardless, the public must recognize that it is for their direct benefit and safety.

While a number posted on a house may seem a trivial issue, it is the main physical feature used by responders when locating the source of a 911 call and the civic addressing system cannot function without it. The eventual implementation of onboard navigation systems in all emergency vehicles will complement but not reduce the requirement for posting a civic number, since it has a much broader application than emergency response, including other services such as postal delivery. As well, the occupant of the building must know the civic number of the building, and this must be recorded properly in the addressing databases for even an onboard navigation system to be useful. The best method of eliminating confusion and discrepancies is to have the number clearly posted.

2.1.2 Municipalities

There are fifty-five (55) municipalities in Nova Scotia. The municipalities are usually the first (and often the only) point of contact for the public for civic addressing. The municipality administers the assignment of civic numbers and approves local road names. They notify the public of address assignments and any changes as a result of renaming or renumbering. They often maintain their own internal civic addressing databases. Through their activities in the posting of street signage for streets under their jurisdiction, determining civic numbers, and helping to ensure that the numbers are posted, they help build the physical infrastructure of the civic addressing system.

Their data management activities provide the source data that allows the system to function. Notification of civic address changes to EMO allows EMO to update the Master Street Address Guide (MSAG) database. Updates to the NSCAF allow the civic addressing database to be maintained in a timely and consistent manner throughout the province.

2.1.3 First Nations Communities

In the past, the federal government provided civic addressing services to First Nations communities. However, these communities are now either organizing to provide these services as a group, or providing their own civic addressing in the same manner as municipalities in the province. As such, they have the same responsibilities for the maintenance of the NSCAF.

2.1.4 Nova Scotia Emergency Management Office

Nova Scotia Emergency Management Office (EMO) has the primary responsibility to ensure that an effective 911 emergency response system is implemented in Nova Scotia. It acts largely in a coordinating role. It also maintains the MSAG that is used to identify the appropriate responder for each street and area in the province. EMO provides training to 911 call takers and ensures that the provision of 911 services meets appropriate standards.

The implementation of the civic addressing system is the responsibility of the EMO Civic Addressing Coordinator. The coordinator receives civic address updates from the NSCAF nightly email notification system provide by SNSMR- Geomatics Centre. These are used to update the MSAG and then forwarded to the local exchange carrier (e.g. Aliant and EastLink) for updating their civic address databases. The MSAG data are also forwarded to the four Public Safety Answering Points (PSAPs) for 911 services.

The Civic Addressing Coordinator also receives updates from TIR via the NSCAF nightly email notification system on road names and locations of new roads under TIR jurisdiction. EMO adds the names to the MSAG and assigns an address range, map reference, and emergency response information. These road name updates, along with those from the municipalities and First Nations are relayed to the local exchanges carriers when they receive updated copies of the MSAG.

Coordination between agencies to avoid duplication of road names is partly facilitated by the NSCAF, since road names are verified as they are added and the system will notify the user if a duplicate name exists. TIR and municipalities also communicate directly to avoid road naming conflicts.

2.1.5 Transportation and Infrastructure Renewal

Transportation and Infrastructure Renewal (TIR) has jurisdiction of numbered highways and major thoroughfares, as well as many local roads in the province. In some cases it

provides services for local roads in municipalities. It is responsible for posting and maintaining road name signage for roads under provincial jurisdiction.

TIR maintains a database of all provincial roads (Roads Listing Database). It updates the NSCAF with new road data, which in turn automatically notifies EMO and other agencies of the changes. The database includes an identifier, referred to as an authority number that is unique to the given local road within that particular county. Provincial highways are given an authority number that is unique within the province.

TIR considers naming as part of their responsibility for managing provincially owned public roads. For numbered highways, routes, and other major thoroughfares they may consult with municipalities and the public, but have final decision on naming.

2.1.6 Service Nova Scotia and Municipal Relations

Service Nova Scotia and Municipal Relations (SNSMR) were asked to take the leadership role in the development of the NSCAF in cooperation with EMO and other provincial and municipal agencies. This involved database design and implementation, collection of civic addressing data throughout the province, development of data access tools, and coordination with municipalities, First Nations communities, TIR, and EMO.

SNSMR is the custodian of the NSCAF. It also coordinates the management of the consolidated civic address data through the NSCAF applications and maintains the standards and support documentation.

2.1.7 Local Exchange Carriers

Local Exchange Carriers (LECs) receive civic address data from EMO, and also directly from the public when they call for telephone hookup service. It is validated against the MSAG ranges to determine if the address is valid. These service address databases are managed by each LEC for a variety of purposes from customer billing to a source for 911 contact information.

The service address database of Aliant is referred to as the MARTENS database (replaces the ATLAS database). As the primary LEC in Nova Scotia, Aliant is responsible for merging the service address databases of all local exchange carriers (such as EastLink) and extracting the relevant data to create the LOGICOS (formerly ALERT) database containing civic address, community, customer name, and telephone number.

2.1.8 Public Safety Answering Points

Public Safety Answering Points (PSAPs) are responsible for receiving calls for 911 services, evaluating requests, and directing the requests to the appropriate responder. This service is provided through a public/private owned partnership located in four locations across the province.

All data converge at this point and are used to present the 911 call takers with location information of the caller and the local responder contacts (from the LOGICOS, MSAG and associated databases). This automated display of location information forms the Enhanced component of the 911 system (E-911). PSAP call takers notify EMO on a reactive basis if they determine that the database information does not match what is reported by a caller.

The primary data source for the PSAPs is a tabular database. SNSMR and EMO are currently developing a system to integrate the NSCAF into this 911 system.

2.1.9 Emergency Responders

Police, fire, and medical responders use the civic address data and the posted road signs and civic numbers to navigate to the location of a call for 911 services. They also provide advice on the content of the NSCAF, such as community boundaries and Emergency Service Zone boundaries (ESZ). Poison Information Centre also receives emergency calls routed through 911. They attempt to resolve issues over the telephone however are also able to relay the call to dispatch emergency services.

Emergency Health Services (EHS) currently uses a range based mapping system in all ambulances for onboard navigation and to identify the location of the emergency. The data for this system is updated every month using data from the NSCAF. The RCMP are using similar software and have this available in their vehicles. In other cases, the responders may access the NSCAF data through an on-line map viewer (see Civic Address Finder (Secure) documentation) to identify the location of the emergency. Not all responders currently access these navigation aids. Many still rely on either local knowledge of the area or hardcopy maps. These are used in conjunction with the posted civic number, road name, and community signs to navigate to the location of the emergency.

2.2 Major Components

As noted above, the civic addressing system is more than community names, street names, and civic number signs. The system relies on enabling legislation, databases to manage the data, and physical infrastructure such as signage to provide navigation references. The system is then used by PSAPs and emergency responders to locate callers for 911 services, and is available for countless other users for general navigation.

2.2.1 Signage

Without correct signage, the functioning of the civic addressing system is impaired. Community name signs, street name signs and civic number signs are the physical assets that allow navigation to a particular location and assist in providing a common understanding of the names that are used. Enhanced 911, embedded Global Position System (GPS) technology, and onboard navigation systems can reduce our reliance on signage, but until these technologies are universally implemented and until people

become accustomed to providing their address in geographic coordinates, we will still rely on these signs. Civic addressing using house number, street name, and community name is a universally accepted and intuitive method.

2.2.2 Master Street Address Guide

The Master Street Address Guide (MSAG) has historically been the central database for 911 services. Before the advent of Enhanced 911 (E-911), a caller to 911 verbally relayed their address to the call taker and the call taker searched for the address in the MSAG. The MSAG identified the range of civic numbers, street and community. It also provided the contact information for police, fire and medical services and thus the call taker could transfer the request to the correct responder.

The MSAG is the initial check to determine if a civic address is valid. Addresses submitted to EMO by the NSCAF daily notification service are verified against the street names and address ranges in the MSAG. Civic numbers outside of the MSAG ranges are verified, and the MSAG range adjusted or the address corrected.

With E-911, the MSAG is still a key link. The physical address of the caller is automatically displayed as the call is received, but the MSAG is still needed to identify the local responders for that location. As well, in the event that an exact civic address is not found, the address ranges in the MSAG can be used to identify the correct responders.

2.2.3 Municipal and First Nations Databases

All municipalities and First Nations communities maintain their own electronic or paper based civic address databases. These function in parallel with the civic addressing system, but are also used to assign and manage local civic address data. Where available, these data were used to build the NSCAF and were validated in the field during construction of the NSCAF.

2.2.4 Enhanced 911 (E-911) Databases

With E-911, the telephone number of the calling telephone is received in a manner equivalent to Caller ID. This is known as Automatic Number Identification. The number is used to search a database for the customer's name and address so that the caller can be identified, even if nothing is spoken.

This method does not accommodate calls placed from cell phones. With Phase I wireless, only the telephone number and cell tower identification is displayed. The implementation of Phase 2 wireless 911 services requires more accurate locating of the cell phone, and can use a GPS receiver embedded in a cell phone. With this technology, when a wireless call is made, the telephone number and the current geographic coordinate of the telephone will be transmitted, bypassing the database lookup. As of Feb 1, 2010 Phase 2 wireless is available to cellphone users province wide in Nova Scotia.

LOGICOS is the 911 dat abase that holds the individual civic addresses, as well as the telephone number and customer name. It is derived from a general service address database (MARTENS) used by Aliant for a variety of purposes, along with the general service address databases maintained by EastLink and other LECs. These service address databases are updated as customers call to request telephone hookups, and as information is provided by municipalities (through EMO). Since LOGICOS is derived from these service address databases, it only contains civic addresses for customers who have landline telephone service.

The LOGICOS database is regulated by the CRTC and due to privacy issues, access is restricted. As a 911 call is received, the calling telephone number is displayed (through Automatic Number Identification) and LOGICOS is searched for a matching telephone number. This process of retrieving the complete civic and customer information with the call is referred to as Automatic Location Identification.

2.3 Nova Scotia Civic Address File

The development of the NSCAF is a key requirement as the civic addressing system becomes more comprehensive and able to accommodate Phase 2 wireless E-911.

Whereas the MSAG is text based and able to resolve an address to a particular street in a community, the NSCAF being map based, can pinpoint and map the location and provide additional information about the civic address such as the type of building use. The buildings, road network, and community boundaries are managed as geographic objects that can be displayed on a map and integrated with other map data such as the Nova Scotia Property Records Database (NSPRD).

The database stores civic numbers, building use, street names (and street name aliases), and community names for all addressable locations in the province. It includes keys that link to databases for TIR (Authority Number), property (PID key), municipal (Mun_ID), and the gazetteer of place names (GSA_Code). A business or building name can also be added to the civic address, along with the postal code; this can be valuable information for dispatch. From the geographic data, the geographic coordinate of each point is known and the road network is available for further analyses such as routing studies.

The NSCAF infrastructure is maintained by Service Nova Scotia and Municipal Relations at the Nova Scotia Geomatics Centre in Amherst. The initial data for the database was collected from municipalities and through an extensive multi-year field program. The municipalities, First Nations communities, and TIR update the NSCAF directly using web-based applications or through batch updates.

Each change is date stamped, which is useful for managing changes to the database and is also used when extracting data from the system. Deleted records are flagged, but are still maintained in the database along with all interim changes. This provides a continuous lineage that can be used to identify the history of a record.

The NSCAF is the central hub for the storage, communication and dissemination of civic addressing data for the province. The applications built around the NSCAF assist in the development and maintenance of civic address data in the province by allowing municipalities and other authorized users throughout the province to update the central database directly. An important innovation is the automated notification system. On a daily basis, EMO, municipalities, and other agencies receive an e-mail that identifies the number and description of changes, additions, and deletions to NSCAF civic addresses and roads.

For each item, EMO can review the edit directly from the database, and the nature of the change is noted. If a street name or address is revised, the old and edited versions are presented. As EMO acknowledges receipt of change, a confirmation is e-mailed back to the source provider that made the edit. In addition, notification of the change is also e-mailed or faxed automatically to other groups affected by the change. This is a significant change and is intended to streamline the existing notification system and reduce the effort required to disseminate civic address notifications. The details of the NSCAF tables and structure are provided in NSCAF Schema - Appendix A.

2.3.1 Nova Scotia Road Network

The Nova Scotia Road Network (NSRN) is the primary source for the road network data in the NSCAF. It is based on a federal initiative (National Road Network) to standardize the collection of road centreline data in Canada. The federal standard specifies the structuring of the data and the attributes to be collected. The details of the NSRN are provided in Nova Scotia Road Network (NSRN) - Appendix B.

2.3.2 Future Considerations

The NSCAF continues to evolve. As the needs of other users are identified, additional structure may be added, or references added to allow the data to integrate with other external databases.

The requirements to support wireless communications also continue to evolve. Nova Scotia is well ahead of most jurisdictions with the development of the map based NSCAF. As support for wireless E-911 services develops, modifications and enhancements to the NSCAF will undoubtedly be required. However, the flexible design of the database will help ensure that these needs can be readily accommodated.

2.3.3 NSCAF Web Services

Web services have been developed that provides a mechanism for providing updates from the NSCAF. A web service is defined as “a software system designed to support interoperable machine to machine interaction over a network.” Web services are frequently just web APIs that can be accessed over a network, such as the Internet, and executed on a remote system hosting the requested services.

2.3.4 NSCAF Synchronization

The web services provide part of the method for synchronizing the NSCAF with external databases. The web service opens the NSCAF over the Internet so that applications can connect and receive NSCAF data. Unlike the NSCAF notification, this provides NSCAF changes in a way that can be used to update a user's database in a semi-automated manner. The changes can be based on time stamps so that only changes within a specified period are received, or any other schedules or content can be specified. This generally avoids requiring the user to manually change their database when the NSCAF is updated. This can provide a more timely and efficient update, and reduces the occurrence data entry errors.

This approach is intended for groups such as Property Online and the Department of Environment that require continual civic address updates. They would develop their own applications to manage the receipt of the data, and then connect to the web service over the Internet to synchronize automatically with the NSCAF.

Two additional web services have been developed to facilitate one true source of mailing and civic address for properties in Nova Scotia. That is, the NSCAF Uplink Service which is made up of two services: a mailing address service and a civic address service. The Mailing Address Service is a new service that has been created to support the flow of mailing address data for property interest holders between and among Service Nova Scotia, the PVSC and Municipalities. It is expected that over time most, perhaps all, Nova Scotia Municipalities will connect to the Mailing Address Service.

The Civic Address Service is a significant enhancement to the existing NSCAF system. The key enhancements are**:** a web services that offers data providers a more easily and effective way to share their civic address data with the NSCAF, and a refined NSCAF data structure that align**s** with new data standards that have been adopted as part of the NSCAF Uplink Service. The expectation for the Civic Address Service is that it will be the data transfer mechanism used by Municipalities that have or create their own internal civic address system.

The Civic Address Service publishes a set of standard web services that allow organizations to add, update, search for and get current Nova Scotia civic address information (attribute and shape data).

3 GUIDELINES FOR IMPLEMENTATION

This chapter provides guidance on the application of civic addressing in Nova Scotia. It is not intended to impose strict rules, but to provide recommendations. There will always be exceptions to these guidelines, and in some cases valid reasons to deviate from them. Users are encouraged to contact EMO to discuss situations that are not covered in this document or to discuss other alternatives. These actions will assist in the consistent application of civic addressing in the province.

3.1 Emergency Service Zones

Emergency Service Zones (ESZs) reflect the boundaries of jurisdiction for medical, fire, and police response. The response agencies report their boundaries to the municipalities and are forwarded to EMO for use in deriving the ESZs. The boundaries in some areas are poorly documented and are under review. Boundaries are defined based on the distribution of response agencies, population served, response times, and access.

Development along the boundaries of ESZs may necessitate a modification of the boundary. If a development extends in to a neighbouring zone, but access is only available from the originating zone, then a change will be required. In other cases, such as along controlled access highways, compromise is often required and responders may be able to provide better service into a neighbouring zone due to response times.

The ESZs are referenced by an Emergency Service Number (ESN) and these numbers link to the Agency Table that identifies the contact information for each responder in that zone.

3.2 Communities (General Service Areas)

3.2.1 Communities vs. GSAs

GSAs were developed for administration of the NSCAF. They are medium scale geographic areas that encompass built-up areas or define an administrative unit. Areas such as Maitland in Hants County form distinct developed areas and are contained within single GSAs. Other cases have no development but are still identified as GSAs; for example, Jim Campbells Barren in Inverness County is given its own GSA since it has special administrative status under the Wilderness Areas Protection Act.

GSAs are generally analogous to traditional communities, but there are distinct differences. GSAs encompass all areas of the province. Even remote, uninhabited areas are assigned to GSAs to provide a consistent means of identifying these areas. In developed areas, the boundaries of GSAs generally follow community boundaries, although no legal connotation is implied regarding the boundary definition. However, municipal councils are now moving towards adoption of these boundaries to define their communities, which will provide consistent application of the terminology.

The long-term goal is to discontinue the use of the term "GSA", and adopt the use of "Community" to reduce confusion.

3.2.2 Community (GSA) Names

The names of the GSAs take the name of the local community where possible, but it does not indicate that the name has any official status outside the context of civic addressing. The intent is to use a name that people are most likely to report as the community name when they call for 911 services. This can cause discrepancies, since some locations may be known by multiple names, or amalgamation of communities may cause confusion over the proper name.

Municipalities are responsible for naming NSCAF communities, and creating new NSCAF community boundaries. New NSCAF communities may be required as a result of new subdivision development in rural areas, but generally communities have a long established history and development of new communities would be rare. Deciding when an area warrants a new NSCAF community is a subjective decision, but should be guided by considering how a resident would respond if posed with the question "What community do you live in?"

3.2.3 Community (GSA) Boundaries

GSA boundaries were refined in consultation with municipal staff, councillors, EHS, local fire and police, among others. In addition to the use of existing community boundaries as noted above, they also use physical features such as rivers, shorelines, and bridges as boundaries. The use of physical features, where feasible, has the advantage of providing a clear separation of NSCAF communities.

The main criteria used in defining the NSCAF communities are:

- Existing boundaries;
- Where people said they lived;
- Road access into the community;
- Community name signage;
- Property boundaries.

Municipalities can adjust NSCAF community boundaries to accommodate new road construction near the boundaries of the communities. Typically, the road network in a developed area is encompassed within a single community. This is preferred, since it avoids having isolated roads extending into a neighbouring area with no external road access from that community.

3.2.4 Community Signage

Where community signs are posted along thoroughfares the community boundary is generally aligned to cross the road at the location of the sign. Thus, the community name sign effectively marks the community boundary.

Community names posted by TIR have a consistent appearance in the province, using white lettering on a green background with a white border. Spelling of community names is determined by the municipality and is reflected in the Gazetteer. The municipality usually identifies the location to TIR of where to place the community name sign. This placement is important as it reinforces to residents which community they are in, and it is used to refine community boundaries in the NSCAF. Municipalities may also post community signs.

3.2.5 Nova Scotia Gazetteer

The provincial gazetteer provides a consolidated database of place name and features names in Nova Scotia. The content of the gazetteer is reviewed in consultation with municipalities and First Nations communities and as a result, names may be added, modified, or rescinded. It can be useful for identifying local neighbourhoods that are not identified in the NSCAF as a separate community, but are used by local residents as a common name for the area.

3.2.6 Jurisdiction across County and Municipal Lines

Occasionally, NSCAF communities straddle county or municipal boundaries. While boundaries are aligned to avoid this whenever possible, there are cases where it is unavoidable. For example, Kejimkujik National Park extends into Queens, Digby, and Annapolis counties. The park is divided into three NSCAF communities, and so civic addressing issues are administered by three municipalities. A difficulty arises when the end of a road extends just over the county line. In theory, the municipality in the neighbouring county should assign addresses to this section of road, but since the only access is through the source county it is preferable if that municipality assign and administer the address data.

3.3 ROADS

3.3.1 Road Naming

Nova Scotia municipalities, First Nations communities, and TIR have the responsibility for naming roads under their respective jurisdictions. In addition, the public has a role in naming private roads, and may have input to the naming of public roads in many cases. Road naming is the most contentious process in the civic addressing system due to the number of agencies involved and the subjective nature of names that can influence the character of a neighbourhood.

TIR manages road naming for unnumbered and local roads that are administered by the province as part of their responsibility for these roads. However, some municipalities consider naming of these roads as part of their civic addressing responsibilities.

TIR has developed a cooperative approach to road naming and renaming that recognizes the contribution of municipalities and First Nations communities to this process. It also refers to the road naming guidelines in Road Naming Guidelines and Procedures. as described in Section 2.6.1. The Road Listing Minute Procedure Outline identifies the following steps:

1. Residents petition the Local Municipal Council for a road name change OR the Municipality initiates a road name change by petitioning the residents.
2. The completed petition is presented to the Local Municipal Council for approval.
3. If the Local Municipal Council approves the road name change a request to change along with a copy of the completed petition and motion by council is sent to the local Department of Transportation and Infrastructure Renewal (TIR) office for review by the Area Manager.
4. If the Area Manager agrees to road name change, s/he will initiate the name change process by forwarding a notice of approval, along with a copy of the completed petition and motion by council, to the TIR Head Office to initiate the change process.
5. The requested road name change will be validated according to the Department's Road Naming Guidelines (adopted from the Nova Scotia Civic Addressing Project).
6. If the selected road name meets the evaluation criteria, the process to change the road name will commence. If the selected road name does not agree with the evaluation criteria the road name change request will be rejected.

While some of these steps may be rearranged or modified to integrate better with the process in many municipalities, it demonstrates a significant step towards reconciling the issues between municipalities and the province.

The guiding principles with road naming are to avoid duplication of road names within a community, and to have names that are not easily confused with similar sounding names or are difficult to pronounce or spell.

Road naming is often a contentious issue with the public since existing names have an established history. There are also cases of a local road being referred to by multiple names, and this makes it more difficult to assign an “official” name since there may not be a consensus among the residents.

Some municipalities have bylaws that provide the authority to assign a name, if the residents cannot agree on an acceptable name; others use policies. This is generally used as a last resort, as it is always preferable to have the support of the residents.

Most municipalities maintain a database of existing road names, and the NSCAF provides a rapid means of determining if a name exists. Municipalities can also develop a registry of names to draw from when assigning new names. For new development, the developer is encouraged to suggest names for the new roads, but in the absence of any recommendation, the registry can be helpful in expediting the assignment of names.

Names that reflect the local history and heritage are encouraged. Theme names are also acceptable and are commonly used. Naming streets for individuals is a common practice, but typically it is only acceptable if the person is deceased, or noteworthy of such a request.

Regarding the specific content of the name, some elements are not recommended as they may cause confusion in spelling or usage. Abbreviations, punctuation, and single letters should all be avoided as part of a name. An exception to the use of single letters is when it is due to the removal of punctuation (such as Bras D Or Road). The use of cardinal directions (north, south, east, west) should not be used as part of a name, since they have a specific use in name suffixes.

Duplicate street names within a community should be avoided, and ideally the names should be unique within a county. Homophones should always be avoided since when spoken they will have the same effect as duplicate names, as well as the added difficulty of different spellings. Even words that are spelled quite differently may be close enough when spoken to cause confusion (e.g. Gem and Jim).

The majority of road names in Nova Scotia are English. While it is not an officially bilingual province, the use of French names and street type suffixes is acceptable in some municipalities. First Nations communities often use native words in street naming, and this also occurs with Gaelic signs in Pugwash, Cumberland County. These names reflect the local history and culture, and thus must be respected. However, there is a greater potential for confusion, especially for those unfamiliar with the local language. To avoid this, the use of bilingual signs (with a second name or translation in English) is recommended.

3.3.2 Private Roads

Privately owned roads that service addressable buildings are eligible to be included in the civic addressing system. There are also cases of roads with less than three addressable buildings that have names posted. Any such road with three or more addressable buildings must be named; however, this does not specifically exclude roads with less than three addressable buildings from being named.

It is the responsibility of the landowner to manage and name the road, but the name must be submitted to the municipality for approval. New private roads are often named by the developer during the subdivision planning process.

As noted in Section 2.5, civic addressing bylaws typically specify the format and placement of the sign. The TIR Road Sign Installation Procedure specifies that "*All "Private Road" name signs consist of black Scotch Cal Grade letters and border on a white Engineering Grade background.*". If the sign is constructed and placed by the local residents, the cost of this format may be prohibitive, but the colour scheme of black letters on a white background should be maintained to facilitate standardization of these signs in the province.

Recently in Nova Scotia, there has been an increase in requests for civic addresses for seasonal cottages and other structures that are either temporary or not inhabited year round. These requests are often as a result of an insurance company declining to insure the structure unless it has a civic address. Many of these are on unnamed private roads.

3.3.3 Non-addressed Roads

Logging roads, trails, and other roads that do not service houses or other addressable buildings are often not named and have no civic numbers associated with them. Many of these roads are temporary, and there would be a considerable effort to administer the naming of these roads, especially in areas of active logging. Typically, they are privately owned.

If the owner is prepared to name, post, and maintain the signage, then consideration should be given to including the name in the civic addressing system. With the widespread use of cellular telephones, naming of these roads has merit for loggers, hunters, and others using the road that may require emergency services. The location of the caller can at least be localized to a particular road, even if no address range is assigned. However, to be effective, the naming must continue for each separate road in the network until it intersects with an established named road.

In addition to these roads, long driveways (typically over 100m) are sometimes included in the NSCAF as non-addressed roads if available in the Nova Scotia Road Network. They are added to indicate access to locations that are set back from the road where the access point may not be obvious.

3.3.4 New Roads

New road construction is most often associated with subdivision development. In this case, the developer is encouraged to propose names for the streets. Extensions to existing roads should maintain the same name throughout and avoid the use of supplemental prefixes or suffixes. The road is added to the NSCAF database only after the road is constructed.

3.3.5 Signage

Road signs are standardized in Nova Scotia. Adequate signage of roads is essential to the operation of the civic addressing system. As well as its primary use for navigation, it also

reinforces the "official" name in contentious areas. TIR and municipalities are responsible for posting and maintaining road name signs in the province under their respective jurisdictions. In urban areas, municipalities often contract with local TIR sign shops to make and post signage, but some also make and post their own.

Private road signs are the responsibility of the owners to post.

3.3.6 Special Cases

It is not possible to account for all of the unusual cases that can arise. However, the following sections provide guidance for known issues with the intent of helping to ensure a consistent approach throughout the province.

3.3.6.1 Road Crossing County Line

Many thoroughfares cross county lines, and these roads are usually administered by TIR. Jurisdiction issues are thus simplified to the district offices of that department. Crossing a county line does not automatically require a change in status or name, and in fact it is preferred if the same name is used throughout.

For roads under municipal jurisdiction, civic addressing must be agreed to jointly. If a road crosses into a neighbouring county and ends without connecting to another road, it may be jointly agreed that the municipality in the source county will take sole responsibility for civic addressing issues.

3.3.6.2 Road Following Municipal Boundary

This causes confusion since residents on one side of the street will reside in one community, and those across the street in another. As a result, it should be avoided whenever possible. The preferred approach is to realign the NSCAF community boundaries so that the line runs along the back of a property such that all of the properties abutting the road are encompassed within a single community boundary. However, there are unavoidable cases where a town boundary runs along the centreline of a road; the NSCAF model has been modified to accommodate these cases.

An example of this situation occurs between Springhill and Rodney in Cumberland County. Part of the community boundary (shown in grey) follows Herrett Road. In this location the road is named Herrett Road on one side, and Windham Hill Road on the other. The civics on each side of the street are also quite different, as shown in Figure 4.1.

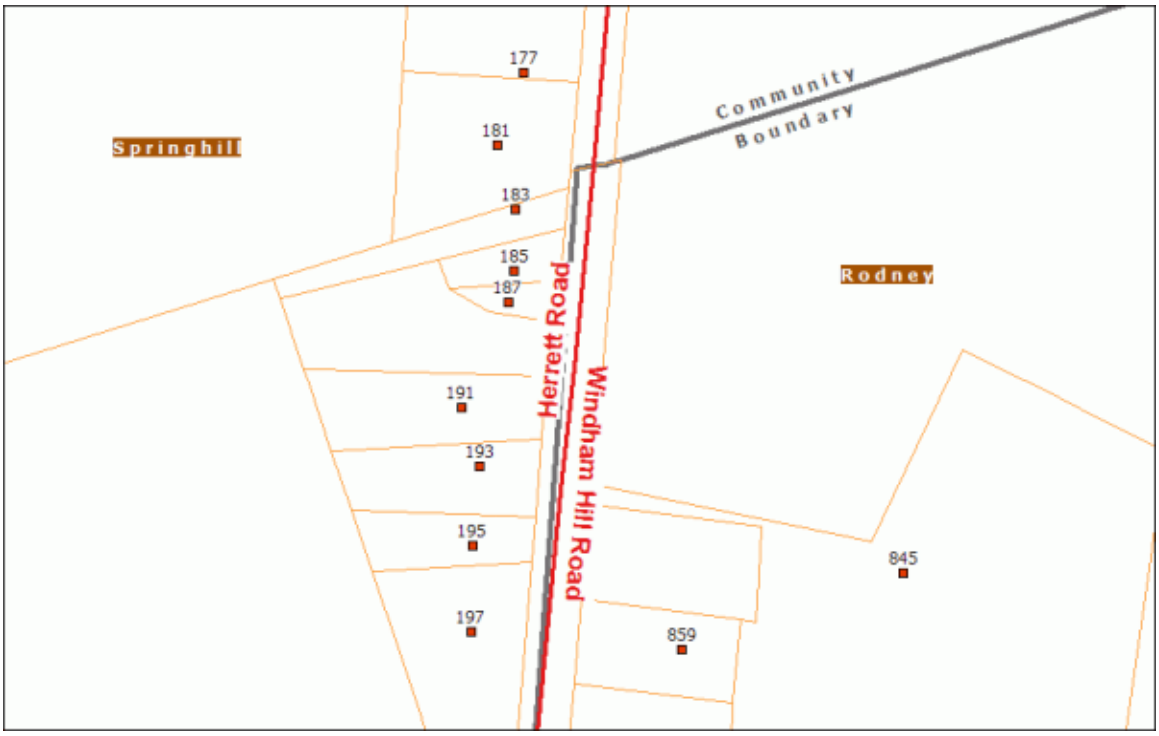


Figure 1 Road following Community Boundary

3.3.6.3 Road Changing Name Midway

This situation occurs, for example, when a TIR thoroughfare passes through a community. The section of road within the community may be administered by the municipality, or jointly with TIR. Within the community the road may have a separate name, and the TIR authority number may not resume until after the road leaves the community. It is preferred that the change in status occurs at a significant intersection, a bridge, or other prominent location. Often, traffic lights are used as the thoroughfare enters the community and this provides a convenient location to demarcate the transition to a new name. Signage must clearly show the new name and authority number at the transition point.

3.3.6.4 Discontinuous Road

Roads that exist as separate physical sections are a particular cause of confusion. Each section is in effect a separate street, and thus each section should ideally have a different name, and be addressed separately. However the situation may arise as a result of a re-alignment at an intersection, another road built over a section of existing road, or a physical separation between sections of a road. Renumbering and renaming is a last resort, but may be the only alternative in this case.

3.3.6.5 "Y" Road

A fork in a road requires that one section be renamed. If both forks retain the same name, then the normal assignment of civic numbers will result in duplicate addresses along

these sections. As an alternative, it has been proposed to assign civic numbers to one section that have numbers offset from those on the other section to avoid duplication. This method can still result in confusion, and is not recommended.

When deciding which section to rename, the first is to determine which section carries the most traffic; this section should be given primary consideration for retaining the original name. The other aspects relate to minimizing the number of residents affected and providing an equitable resolution. If traffic volume cannot be used to resolve the issue, then keeping the original name on the section with the highest number of potentially affected addresses is the most democratic process. Other evidence such as which section was built first, and which has been occupied longer may be helpful, but they are more likely to only further complicate the decision.

3.3.6.6 Cul-de-Sac

A cul-de-sac is a dead-end street with the end enlarged into a circle to allow traffic to turn. Addressing proceeds as for the rest of the street, with odd numbers on one side and even numbers on the other. The odd and even numbers come together at the top of the cul-de-sac.

3.3.6.7 Crescent

A crescent is a street that joins back to the same street from which it originated. When assigning civic numbers, begin at the end that has the lower civic range for the source street.

3.3.6.8 Multiple Residences on Private Driveway

When three or more separate addressable buildings are served by a common driveway, the driveway is considered to be a street and must be named and posted. The buildings are then addressed from the driveway rather than the source road.

There are cases where there are fewer than three addressable buildings on a driveway, and the owner has posted a sign or requested that the driveway be named. This is against the guidelines and, while it is usually discouraged, it should be considered on a case-by-case basis.

3.3.6.9 Emergency Turn Around (Crossovers)

Emergency Turn Around are short sections of road that bridge across the medians of divided highways. Since they are designed to provide access for emergency vehicles, they should be included in the NSCAF. In future, these features will be referred to as “crossovers”.

3.3.6.10 Highway Interchanges

A standardized approach to naming ramps and interchanges is being developed by TIR to avoid duplication of names and to uniquely identify each ramp. The current approach is to use the authority number and direction of travel for the lane serviced by the ramp (e.g. EB for Eastbound), and then to append the exit identifier (e.g. Exit 4), and whether it is an on ramp, or an off ramp. For example, Hwy 104 WB Exit 4 Off would identify the off ramp at Exit 4 from Highway 104 for the westbound lane of the highway.

In cases where two numbered roads merge, the naming convention for the ramps should first consider the type of road (Highway, Trunk, or Route). Highways (100 series) take precedence over Trunks (numbers less than 100), which take precedence over Routes (200 series for east/west roads; 300 series for north/south roads). In cases where roads of the same series merge, use the numerically lower number. For example, the interchange between Highway 102 and Highway 104 in Truro should name the ramps using Highway 102 (e.g. Hwy 102 SB Exit 15 On). This approach will not encompass all possibilities, but provides a starting point to help ensure a consistent approach to naming interchanges.

In general, ramps are not assigned road ranges. The NSCAF supports road segments with no ranges, as long as the parity codes are set correctly (e.g. Unaddressed on both sides). In some cases, it is necessary to assign ranges to support civic addresses adjacent to the ramps. In these cases, ranges can be assigned to one side of the ramp, and the other left unassigned.

3.3.6.11 Limited Access and Unmaintained Roads

Unmaintained roads that are impassable or have limited access should not be named or assigned address ranges. The presence of these roads in the NSCAF can be misleading since it may indicate they could be used for emergency vehicles. While some may be passable as a last resort, they should not be given prominence by naming and ranging. The NSCAF is able to maintain these roads in a separate layer (non-addressed roads).

3.3.7 Resolving Issues

Renaming streets is a contentious process and rarely is completed without problems. It should only be undertaken as a last resort due to the cost of readdressing mail, acquiring new personal identification, and new letterhead and other stationery for businesses. When required, it is done to eliminate confusion and errors by ensuring that the civic addressing system works correctly to serve the public.

Municipalities have the right to rename any road within their jurisdiction, although local residents also may request a road name change. The Municipality of the County of Colchester has developed a procedure for renaming roads that requires residents to submit three proposed names, in order of preference. The name selected by the municipality is then circulated in a petition to all property owners with a civic address on

the affected road. A two-thirds majority is required to demonstrate a clear preference and as a means of discouraging frequent name changes.

3.4 CIVIC NUMBERS

3.4.1 Civic Addressable Point

A civic addressable point is a permanent physical location of human activity that is accessible by emergency vehicles.

A civic addressable point was originally envisaged to be an inhabited building with a telephone. This was found to be too narrow a definition, and it has subsequently been expanded to accommodate a variety of other uses.

Civic addressing is a referencing system to uniquely identify a location. Within the context of 911 services, the location must be associated with a human activity. For emergency response, the location must be accessible. While these premises still leave room for interpretation, they are a useful guide for determining whether a location should be assigned a civic address.

The civic addressing system is designed to work with civic numbers, street names, and community names. If a caller to 911 does not know the address, and if the responders are not able to find the location due to a lack of signage, then there may be no merit in assigning an address. Enhanced 911 has reduced the requirement for the caller to know the civic address, but this is only true if the caller is calling from the actual location of the emergency. In addition, many other uses of civic addressing data still rely on posted street signs and civic numbers.

Structures with more than one principal use or occupancy should have a separate civic number for each primary outside entrance.

3.4.2 Distance Interval for Addressing

Civic numbers are calculated based on distance along the street using driveway locations (or often the front door of buildings in urban areas). The distance from the start of the street, or the previous driveway to the new location is measured. This is divided by the distance interval as the basis for calculating the address. The result is multiplied by two (to account for even /odd assignments) and this is added to the previous civic number to provide the new civic number. This method allows for infilling and subdividing, and calculation of approximately how far along the road the address is located. It is used as the basis for range based addressing by many mapping applications.

This method is used in most areas of the province, but some long established areas use a legacy system whereby the next house along the street gets the next sequential number (e.g. 345, 347, 349). Areas with legacy systems are often fully developed, and thus are

less susceptible to having infilling or subdividing, but they do not fit neatly into the uniform civic addressing system, and may affect the accuracy of range based addressing.

A key parameter when calculating the civic number is the civic location. Within the NSCAF, the civic number is typically assigned to the centroid of the building (although other anchor points are accommodated). However, the civic numbers are usually calculated based on the driveway access point. Driveway access generally provides a more definitive point for calculating the civic number, but this has caused confusion within the NSCAF since the number is assigned to the centroid of the building, which is a different location than the driveway access point.

The difference between using the driveway for the civic location rather than the building centroid is subtle, but important. Range based addressing systems will plot a point that identifies the driveway location. Point based addressing systems using the NSCAF will show the building location. Both are valid and useful information. If the driveway runs parallel to the road and the access point to the building is not obvious, then the driveway location is more helpful. But when the building is set back a long way from the road, then the building centroid is useful to determine the setback. The NSCAF actually supports both, since it maintains the building centroids as well as the address ranges.

Two of the main advantages of this system are that it accommodates placement of new civic numbers between existing numbers without renumbering, and it is more accurate for range based addressing applications.

The interval system was used in Nova Scotia during the original province-wide addressing initiative. This project placed interval marks on hardcopy maps for all addressed roads. Some municipalities still maintain and rely on these maps to calculate civic numbers.

Distance measurements are normally conducted in the field by a building inspector or civic addressing coordinator. While the measuring method should be as accurate as is practical, for short intervals of less than 50m, even pacing can provide sufficient accuracy. With a 10m interval, the measurement need only be accurate to within 5m for calculating the civic number.

For placing a new civic number between existing civic numbers, it is theoretically only necessary to know the distance from one of the existing civic numbers to the new addressing point. For example, to calculate a civic number for a location 40m from an existing civic number of 345 using a distance interval of 10m, we calculate ((40m / 10m) x 2) + 345 to give a civic number of 353. To ensure consistent assignment of odd and even numbers, the measured distance is rounded to the nearest 10m before calculating.

In practice, it is preferable to determine the distance from both existing civic numbers. This provides a check of the number, and can also be used to calculate a civic number that is proportionally spaced between the two existing numbers.

To place a civic number between two existing numbers, the distance from each existing civic number is measured, and the existing civic numbers noted as illustrated in Figure 4.2.

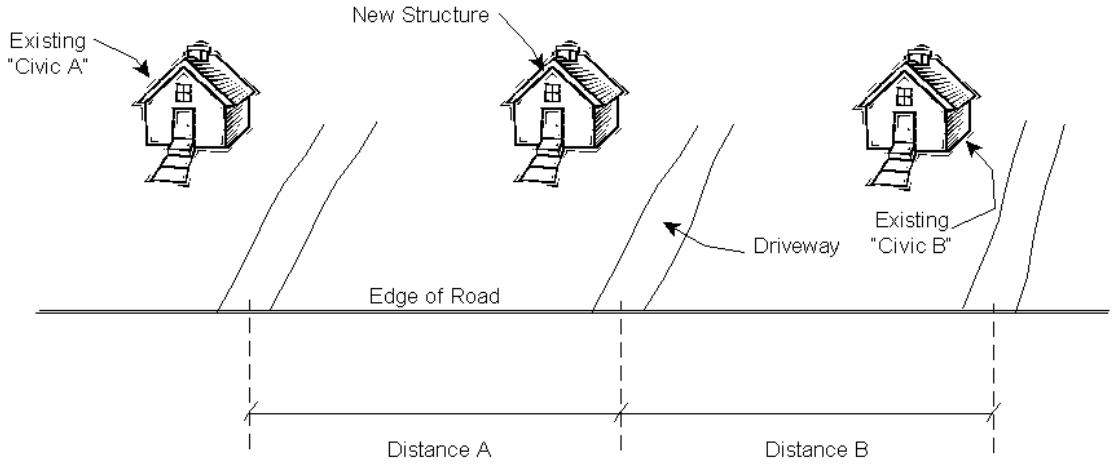


Figure 2 Calculating New Civic Number

The proportional distance of the new address is then calculated as DistanceA / (DistanceA + DistanceB). For example if a new civic point is located 40m from 345 Main St and 20m from 357 Main St, then the proportional distance is 40m / (40m + 20m) = 0.667. The gap in the civic numbers between the existing civic numbers is then calculated as CivicB - CivicA to give 357 - 345 = 12. This result is multiplied by the proportional distance and added to CivicA to give the new civic number as (12 * 0.667) + 345 = 353 Main St. The civic number may have to be adjusted by one to maintain the correct parity.

Civic numbers for new subdivisions are more readily calculated from site plans. When calculating civic numbers from planimetric mapping, there is a potential concern of underestimating the distance since scaling from the map will generally produce a 2-dimensional distance, rather than a 3-dimensional distance that accounts for the rise and fall of the terrain. Again, the distance only need be accurate to within 5m. Slopes in the province rarely exceed 10%, so even at this slope the 2-dimensional distance will not be in error by 5m until the distance exceeds 1km.

The distance interval used in Nova Scotia is typically ten metres, but it does vary. Dense urban areas may use a distance interval of five metres. HRM uses a distance interval of 20 feet.

3.4.3 Starting Point for Addressing

The first civic number on a street is calculated by measuring from the middle of the intersection as shown in Figure 4.3. It can also be measured from the curb and adding six metres, or the standard width to the centreline of the intersecting street.

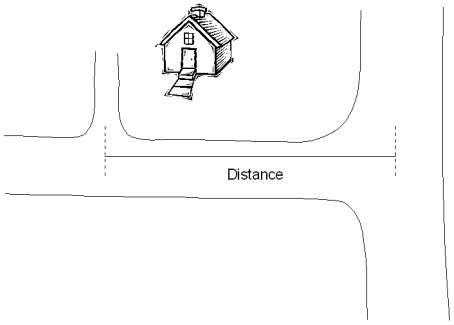


Figure 3 Starting Point for Addressing

Deciding what end of the street to start numbering on is based on the priority of the intersecting streets. A street that spans from a minor collector to a local street would be numbered beginning at the end connected to the minor collector. For connecting streets that have an equal priority, numbers increase progressing in a north and or east direction.

A crescent is numbered from the end with the lower civic numbers for the source street.

A dead-end street is always numbered from the accessible end of the street. If there are future plans to connect the street through to another street, this may be taken into consideration.

3.4.4 Odd/Even Assignment

To maintain a logical sequence, odd numbers are assigned on the left, and even numbers on the right. While the odd and even assignment of addresses is recorded in the MSAG and NSCAF, a consistent use of odd/even assignments simplifies the plotting of addresses for range based mapping systems. Unless it causes a problem, existing patterns can be maintained to avoid renumbering.

3.4.5 Civic Location Data

A civic address is assigned to a specific geographic point. For the majority of addresses in the province, it is assigned to a geographic point located within the building footprint. This point is calculated using surveying, GPS, and/or mapping techniques.

Note that this point may be different from the location used to measure for the calculation of the civic number. The civic number is normally calculated by measuring from the driveway or other access point to the property. But the civic number is normally attached to a point on the map that depicts the location of the building, as shown in Figure 4.4.

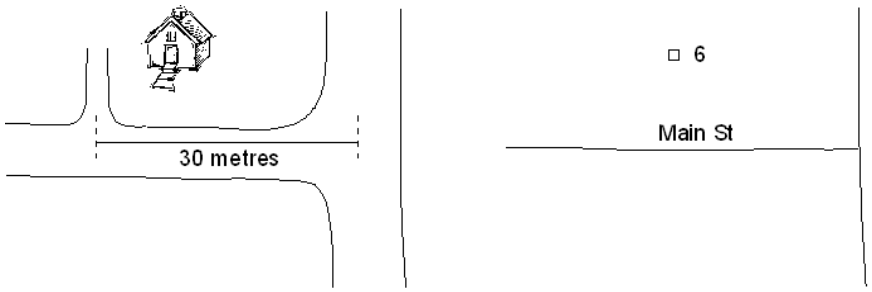


Figure 4 Calculation of Civic Number and Depiction in NSCAF

3.4.6 Posting

Property owners have the responsibility to post their civic numbers. This reminds the residents of their civic number, and is used by emergency responders and others to identify the location.

Municipalities that have civic addressing bylaws typically have requirements for posting civic numbers. These requirements include the size and placement of the sign, as well as its colour and lettering. The model bylaw in Section 2.5 is a useful guide for the posting of civic numbers.

Posting of civic numbers is one of the most difficult components of the civic addressing system to control, since it requires the cooperation of the entire public. Some municipalities use educational programs such as information brochures or public notices to remind people to post their civic numbers. Bylaws may also address penalties for non-compliance.

Civic number signage is also being promoted by EMO. They have initiated the "Sign up For Safety" education program to encourage the public to post their civic numbers.

3.4.7 Building Use

The NSCAF describes the building or land use activity for every civic address using the Nova Scotia Standard Land Use Classification System. This can be used by emergency responders to identify what types of issues to expect at a location. It is also very valuable for other uses of the NSCAF such as asset management, tax assessments, and land use studies.

The Nova Scotia Standard Land Use Classification System uses up to three pairs of letters to form a six-letter land use activity code. The hierarchical pairs of letters describe the primary, secondary, tertiary, and quaternary land use. The NSCAF can accommodate all four levels, but normally only includes the primary, secondary, and tertiary components. The primary codes and activities are described in the table below.

Table 2 Primary Land Use Codes

Primary Classification Code	Activity Description
AG	Agriculture
FI	Fishery
OF	Forestry
IT	In Transition
MA	Manufacturing
MI	Mining
PL	Protected and Limited Use
RC	Recreation, Culture, and Entertainment
RS	Residential
SA	Sales
SE	Service
TR	Transportation, Transmission, and Storage

The secondary and tertiary classification codes provide further detail on the type of primary activity. For example within the Residential primary classification are codes for single unit dwellings (SI) and duplexes (TW). The primary and secondary codes are combined into a single code (e.g. RSSI and RSTW).

The building use information has a variety of uses, including emergency management. The coding distinguishes health care providers, hospitals, clinics, residential care facilities, assembly halls, churches, schools, colleges and other facilities that may be needed in the event of an emergency.

While the Nova Scotia Standard Land Use Classification System is able to accommodate multiple codes for a single property, the NSCAF only supports one code per address. There may be cases where a single civic address is associated with multiple uses. A farm is a typical example. The property is associated with farming, but the civic number is associated with the dwelling. In this case, the building use code would be based on the primary use of the main building, which in this case is a dwelling (RSSI).

A complete list of land use codes and a further explanation of their application is contained in the Nova Scotia Standard Land Use Classification System document.

3.4.8 Building Name

An additional field has been included in the NSCAF to accommodate names of buildings. Many buildings are known more commonly by their name than by their civic number. Someone calling from St. Luke's Anglican Church is more likely to know the name than the civic address of 9 Veterans Avenue. This is true of most schools, malls, churches, and other public buildings. The building name should be included as it is posted on the front of the building.

3.4.9 Postal Code

The NSCAF has always been able to accommodate postal codes, but the field in the database has generally not been populated (with the exception of CBRM). An initiative is now underway to provide postal codes for the NSCAF as a supplemental reference. The NSCAF is not intended to be used as a mailing list, but the postal code of the physical address will be shown for civics in the NSCAF. *** Please note: Postal Codes haven't been updated since March 31, 2015**

3.4.10 Special Cases

There are limitless variations on civic addressing that are open to interpretation. The following sections are not meant to impose rules, but to provide guidance for some of the unusual cases as a way to improve the consistency of civic addressing in the province.

With the NSCAF, we have the capacity to accept more locations as valid civic addressable points. The traditional system relies on a telephone number to link to a civic address for enhanced 911 services. However, PSAP call takers now have the NSCAF as a supplementary reference, and can display a map of a civic address without the use of a phone number.

There are also special cases that arise from the configuration of buildings in a local area. The general rules are that multiple units in a single building have a single civic number assigned to the building. Multiple buildings are assigned multiple civic numbers. If the structures are located one behind the other, the civic numbers are assigned such that they increase going away from the road.

3.4.10.1 Apartments

A single apartment building is typically issued a single civic number. Each apartment is identified by an apartment or unit number. If there are multiple structures in an apartment complex, each separate structure should be issued a separate civic number.

3.4.10.2 Basement Apartments

An exception to the general rule for apartments is when a residence has a basement apartment, or other similar rented space within the main structure that has a separate entrance. These are often provided with a separate civic number. The recommended approach is to issue one civic number, and to use unit numbers to identify each residence. Unit numbers should not include fractions. Letters should not be used.

3.4.10.3 Condominiums

Condominiums are addressed based on the nature of the structure. For apartment building style condominiums, they are addressed in the same manner as for apartments; Even though each condominium is owned separately, one civic number is assigned for each building. For duplex and row housing style condominiums, each separate entrance is assigned its own address.

3.4.10.4 Duplexes and Row Housing

Duplexes and row housing are owned separately and have separate entrances. They are usually on separate parcels of land, with only a shared wall and property line. These are addressed separately as if they were detached residences. If necessary, the distance interval can be decreased to 5m to provide additional civic numbers for addressing.

3.4.10.5 Malls

Malls are addressed in a manner similar to apartments. One civic number is assigned, and each store in the mall is identified by a unit number. If there are multiple buildings on the same mall property, each separate building should be issued a separate civic number.

3.4.10.6 Strip Malls

A strip mall is addressed in the same manner as other malls. One civic number is assigned to each separate building, and each unit is identified by a unit number.

3.4.10.7 Multiple Entrances

Large buildings with entrances on multiple streets present a unique case. Unlike other buildings that would have a single civic address, it is recommended that each entrance that fronts onto a public road be addressed separately. Buildings that are accessed by a single driveway do not necessarily require multiple civic numbers, but multiple addresses are recommended if the building has entrances that are accessed from different streets.

3.4.10.8 Corner Lots

For typical buildings on corner lots, the building is normally addressed from the side containing the main entrance. If the front entrance is obscured, or the building is best accessed from an alternate entrance, it is acceptable to address the building from that side.

3.4.10.9 Vacant Lots

Some municipalities specifically exclude vacant lots from civic addressing. If there is no telephone associated with the location, the E-911 system will not automatically display the location, and thus the civic addressing system will not function optimally. However, the basic 911 operations will still be helpful and if a caller is able to tell the call taker the civic address, responders will be able to locate the address normally.

Addressing of vacant lots can be helpful for farmers, seasonal workers in blueberry fields, or other situations where there is regular activity. It is recommended that if the location

is accessible, and the owner makes a request and is willing to post a civic number that these sites be included in the civic addressing system.

3.4.10.10 Multiple Civic Numbers on a Single Property

It is permissible to have multiple civic numbers assigned to separate buildings on a single property if each building is occupied independently. Ancillary buildings such as sheds, garages, and barns are not given a separate address unless they have a separate driveway and separate telephone access.

Each civic number will be associated with the same Property Identification (PID). In the past, this has caused a conflict with the Nova Scotia Property Records Database (NSPRD), since that database was only able to accommodate one civic address for the physical location of the property. However, the NSPRD has been modified to allow multiple civic addresses.

3.4.10.11 Addressing Manufacturing Facilities and Similar Controlled Access Sites

Many manufacturing sites have multiple buildings, but access to the site is controlled by a gate or main office. For these compounds, it is acceptable to assign one civic address to the main access point (e.g. main office). In addition, unit numbers can be used to identify all other addressable buildings. It is preferable to address each building individually if it can be done in a straightforward manner. In either case, building names should be encouraged as a supplemental means of identifying individual buildings.

3.4.10.12 Addressing College Campuses and Similar Public Complexes

Options for large public complexes depend on the size of the facility. For large facilities, the preferred option is to address each building individually and name each internal road within the complex. For smaller complexes, it is acceptable to address the main administrative building only, and then optionally to assign unit numbers and building names to the other addressable buildings.

If these options are not feasible, it is acceptable to assign a civic address to each entrance. Since most buildings on a campus are more often referenced by a name, the use and posting of building names should be encouraged as a supplemental identification.

The use of unit numbers to distinguish buildings in cases such as this can lead to difficulties. The NSCAF has the ability to extend the use of unit numbers to internal suite or apartment numbers. These internal numbers would be stored in the Unit field in the NSCAF database. However, this would present a conflict if the Unit field was already used to identify individual buildings that share a civic number. For example, a dormitory at #37 Unit 5 Cornwallis Lane could not include addresses in the NSCAF for each dormitory room since the Unit field is used to address the building. Also consider a twin tower condominium development that uses one civic number, and Tower 1 and Tower 2

to distinguish each building. Again, the Unit field is used to store the tower numbers, but there is then no capacity to store the internal apartment numbers. This has implications for Canada Post and a variety of other agencies that provide civic based services.

3.4.10.13 Addressing on Islands or Lakes

Buildings on coastal and inland islands, and buildings adjacent to lakes with no road access may be considered for addressing. There is debate whether these buildings are addressable, as they have no ready access by emergency vehicles, and there may be additional effort required by municipalities to visit these sites to assign the address. As well, some jurisdictions use methods somewhat different from what is identified here, and these are still under review.

On larger islands, local roads may exist, and these can be named and the civic addresses assigned in the normal manner. If there are no roads on the island, the next option is to assign the civic address based on the wharf location typically used to access the island. This method is only adequate if there are a small number of buildings accessed from a particular wharf.

If these options are not appropriate, the shoreline of the island or lake may be used as the reference for addressing. The NSCAF allows users to select a shoreline and assign a name and range to it. A special road type suffix of "Water Access" is assigned. HRM uses this method in some cases and begins numbering at the most southerly point of the island or lake using a 50 foot (~15 m) interval, and assigns odd numbers on the east side, and even numbers on the west side.

3.4.10.14 Addressing other Remote Buildings and Camps

Historically, remote buildings and camps were not included in the civic addressing system because they did not have telephones or road access for emergency vehicles. The common use of cell phones now permits calls to be made directly from many of these locations. At present, enhanced 911 service is not available for cell phone calls as the telephone number will not be associated with the location. Thus, the caller must be able to relay the civic address to the call taker.

A difficulty in addressing remote locations is that the civic addressing system was designed for assigning addresses along named roads. Without a named road, how can the location be found? Even if there is a network of trails that lead to the location, it is still a considerable task and expense to name all of these trails and manage these data. As well, it only has limited use if the roads are not accessible by emergency vehicles.

For these remote sites, people are more likely to associate the location to a geographic feature such as a river, lake, or nearest highway access. If the geographic feature is named, it has been proposed that the address be assigned using the name of the feature. For rivers, it would present the same difficulty as naming trail networks - ensuring that

the rivers and branches were named and these data managed within the civic addressing system.

With the advent of Phase 2 wireless, cellular telephones will have the ability to automatically transmit their geographic coordinates to a 911 call takers. Combined with the NSCAF, this will allow the location of the caller to be plotted directly, without the use of a civic address. This reduces the infrastructure (road names, signage, civic numbers, and data) needed to identify the location of a caller, but the civic addressing system will still not function if the responders cannot navigate to that location.

For these remote locations, it is assumed that responders will be specialized, and have access to GPS equipment and/or topographic maps. When provided with a geographic coordinate, they can identify the location and determine the best means of navigating to the location.

An existing system that does not rely on road names and civic numbers has already been adopted in some areas. The Universal Addressing System encodes the geographic coordinate to an eight or ten character string that would be decoded directly to give a geographic coordinate without the need for a database lookup. The developer of this proprietary system is promoting it as a replacement for traditional civic addresses.

3.4.10.15 Mobile Home Parks

The preferred method for mobile home parks is to assign street names and number each lot as if it were a typical residential neighbourhood. The frontage interval should be decreased to five metres to accommodate the higher density of buildings. Assigning one civic number to the mobile home park and assigning lot numbers to each lot can cause confusion and is not recommended.

3.4.10.16 Public Telephones

Outside public telephones can be considered like any other structure and are addressed accordingly. For telephones on street corners, they should be addressed to the street that either the door faces, or in the absence of a door use the direction that the telephone faces onto.

Telephones in the parking lots of stores or other buildings should be given the same address as the building. Likewise, telephones attached to the outside of a building should be assigned the same civic number as the building.

3.4.10.17 Hiking Trails

Requests have been made to include hiking trails in the civic addressing system. Trailheads often have posted names, so part of the infrastructure may already be present. For trails shorter than two km, it is recommended that only the trail head be addressed, and that it be addressed from the road that it is accessed from.

For longer trails, it is suggested that they be addressed as if they were a road, with distance markers used to identify specific locations along the trail in the same manner as highway markers. For this to be effective, distance markers would have to be installed and maintained along the trail and entered in the MSAG and NSCAF databases.

3.4.10.18 Camping Parks

Typical recreational camping parks should be assigned a single civic address that is associated with the main administrative building. Large parks, including National Parks, should have civic numbers assigned to all major administrative buildings and at the entrance to each campground.

Campsites within the park should be identified by site number, as they are presently. It could be argued that this is inconsistent with the recommended approach for mobile home parks. However, campers are most likely to refer to their location by site number and the name of the campground.

3.4.10.19 Recreational Facilities

Ball fields, soccer pitches, beaches, day parks, and other recreational areas should be considered for inclusion in the civic addressing system. They are locations of regular activity and are potential sites for accidents. They should be addressed from the parking lot access point.

3.4.10.20 Other Public Places

Cemeteries, memorials, look-offs, and other locations where the public gather should also be considered for inclusion. As with recreational facilities, they are addressed from the parking lot or driveway access point.

3.4.10.21 Railway Crossings

Railway crossings are potential sites of accidents and thus it would be helpful to be able to accurately identify these locations. They are addressed from the road they cross with the crossing point used for calculating the civic number. For consistency, it is suggested that the crossing be addressed to the even numbered side of the road.

3.4.10.22 Bridges

Bridges are useful landmarks for identifying locations. They are addressed from the road serviced by the bridge and the civic number is calculated from the middle of the bridge. For consistency, it is suggested that it be addressed to the even numbered side of the road. The number should be posted at the abutments on both ends of the bridge.

3.4.10.23 Federal and Provincial Buildings

Federal and provincial government buildings do not require a building permit for construction. As a result, municipalities will not have the opportunity to assign a civic number through this permitting process. They presently react upon a request from the owner to have a civic number assigned.

Larger properties such as Department of National Defence bases are responsible for their own civic addressing implementation. If they also manage their own emergency services, then they are outside the domain of the Nova Scotia Civic Addressing System. Otherwise, they have the same responsibility as municipalities for the providing civic addressing data to EMO. In the case of HRM, the municipality works in concert with the federal agencies to assign and manage civic address data.

3.4.10.24 Communication Towers, Valve Stations, and Other Unoccupied Structures

It is becoming increasing common to see civic numbers posted on communication towers, gas pipeline valve and compressor stations and other similar structures. They are normally unoccupied and have no phone service. However, they are potential locations of accidents during servicing, and a civic address provides a convenient reference to the location if the work crew calls from a cell phone.

3.4.10.25 Civic Numbering Across County and Municipal Boundaries

Long rural thoroughfares that link communities are numbered such that the numbers reset at county lines. This avoids having very high civic numbers for long roads, but can be difficult to manage as it creates duplicate civic numbers on the same road. However, there are existing cases where the numbers continue across county lines, and these are handled on a case-by-case basis in consultation with EMO and the affected municipalities.

Local roads that cross county lines should only reset if there is an issue with high civic numbers. This is particularly true of dead-end roads that only extend a short distance across a county or municipal boundary, where resetting the numbers would only result in confusion.

3.4.10.26 Assigning Civics to a Road in an Adjacent Community

When a road runs close to a community boundary, there may be cases where a civic assigned to the road actually exists across the community boundary. These are acceptable cases, but should be considered carefully since the road accessing the civic will be in one community, but the civic will be shown in an adjacent community and may result in confusion. Examples of this situation are shown in Section 1.1.2 of NSCAF Schema – Appendix A.

3.4.11 RESOLVING ISSUES

3.4.11.1 Out of Sequence

A civic number that is out of sequence with its neighbours can be the result of an incorrectly assigned or posted address. This will cause confusion when locating the address; furthermore, the address range assigned to the associated street segment may not encompass the out of sequence address, which will result in an incorrectly located address. The issue should be corrected, either by reassigning the address, or notifying the owner that the address is posted incorrectly and explain that an incorrectly posted civic number causes confusion and can result in delays for emergency service.

A civic number may also appear to be out of sequence due to a driveway that extends around the back of a neighbouring building. When examining the civic point and the road network alone, the address is out of sequence, but when the driveway is shown, the address is correct for the driveway entrance. This is the result of the dual interpretation of how the civic number is calculated. Some municipalities use the driveway entrance while others use the building. If the driveway entrance is used for calculating the address, then the address may be correct.

3.4.11.2 Out of Range

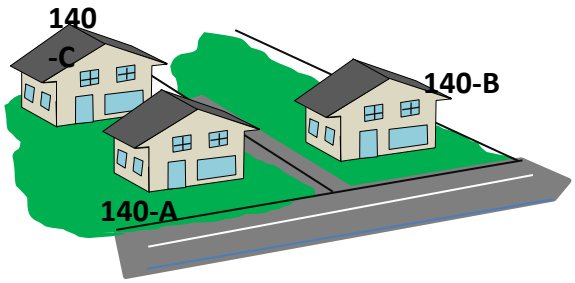
As noted above, civic numbers that are not encompassed by the address range assigned to the street segment will not be located correctly on range based systems (including the MSAG). If the civic number is calculated correctly, the range assigned to the associated segment must be adjusted to accommodate all civic numbers on that section of street. This must be done carefully, as an adjustment to one segment may affect the ranges of the neighbouring segments.

3.4.11.3 Duplicate Civic Numbers

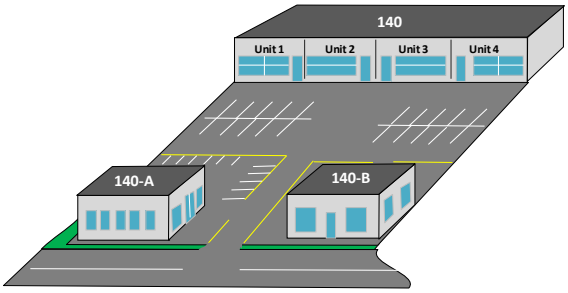
A duplicate civic number is caused by an incorrectly assigned or posted address. As well as causing confusion and delaying service to the incorrect address, it also is a risk to the location of the correct address, since confusion and delays may result there as well. While a person who posts an address incorrectly is primarily putting the occupants at that location at risk, a duplicate civic number also places the other occupants at risk, and thus this situation is more serious. The issue must be corrected, either by reassigning the address, or notifying the owner that the address is posted incorrectly. Any legal means available should be used to ensure that the owner posts the address correctly.

3.4.11.4 Infilling

There are situations where infilling may become an issue (e.g., a new dwelling is built behind two existing dwellings and no civic numbers are available for the new dwelling). As well, the current civic numbers assigned to the dwellings contain a civic suffix. (See image) In these situations it would be preferable to assign a unique civic number to each dwelling using the methods described in Section 4.3.2, Section 4.4.1, Section 4.4.10.11 or Section 4.4.10.12 of this document. If renumbering is not an option, then the current civic addressing practice (i.e., civic suffix - civic number) would continue to be used to rectify issues of this type.



There are other situations where there may be several buildings situated on a property that are assigned identified by a single civic number, and are further assigned a unit number or a civic suffix. In these situations it would be preferable to renumber each building with a unique civic number using the methods described in Section 4.3.2, Section 4.4.1, Section 4.4.10.11 or Section 4.4.10.12 of this document. If renumbering is not an option, then the current civic addressing practice (i.e., the combination of a civic suffix - civic number or civic number – unit number) would continue to be used.



3.5 Working with NSCAF Data

The NSCAF data are normally accessed via the web maintenance tool or civic address viewer. However, the source NSCAF data are also available to work with directly. The NSCAF is comprised of a set of tables that must be joined to resolve a street name or full civic address (civic number, street name, and community name). Each of the primary tables and the link table in the NSCAF are linked using the numeric key fields to make the data meaningful. Examples illustrating how the data are joined are discussed in NSCAF Schema – Appendix A.

4 PUBLIC NOTIFICATION AND CONSULTATION

The civic addressing system serves the public. Any change to the system that affects the public must be done cautiously. The public associate strongly with their street and community names and changes often meet resistance. There is also a direct impact from the requirement to change mailing address, and personal identification. Through consultation and notification, the municipality is more likely to gain public support for change. As well, the public must also know their proper address when providing directions.

4.1 Naming Private Roads

Naming private roads can be initiated by either the property owners or the municipality. If the municipality identifies the need to name a road, it contacts all affected property owners and requests three potential names be submitted for consideration by the municipality. The highest priority name that is acceptable to the municipality is extracted for further consideration. It is returned to the property owners on a petition to vote on acceptance of the name. If there is no clear majority, the municipality will decide on the name. While TIR is not involved with naming private roads, the NSCAF is used to ensure the proposed names do not conflict with names of TIR roads.

If the naming is requested by the property owners, the group or individual are provided with a petition form and a request for three proposed names, in order of preference. If the majority of property owners sign the petition, the municipality will review the names, and of those that are acceptable, the name with the highest preference will be selected as the name for the road. If there is not majority, or none of the submitted names are acceptable, the municipality can assign a name and notify the property owners of the result.

4.2 Naming Public Roads

The public can participate in the naming of most public roads under municipal jurisdiction. The process is equivalent to the process for naming private roads in most cases. TIR also has a process for naming public unnumbered roads that they administer; this department may solicit suggestions from the public for names for these roads.

4.3 Assigning Civic Numbers

The public has no input into the calculation of the civic number. The public requests a civic number or has one assigned as part of the building permit process. The municipality or First Nations community assigns the number and notifies the public via a letter.

5 QUALITY IMPROVEMENT CYCLE

The civic addressing system strives to be accurate and complete, and to ensure that all databases agree. Rigorous and systematic quality control was applied during the construction of the NSCAF, and ongoing reconciliation is used to ensure that the databases are synchronized. Through periodic and systematic verification, the quality of the data are enhanced. Working with the data can also reveal residual errors and issues, and as these are corrected, the quality is also improved.

5.1 Proactive Verification

During the construction of the NSCAF, the quality of the data were independently verified. The data were checked for accuracy and precision, completeness, structural integrity of the database, and documentation of the content and lineage. This provided a quantitative measure of quality as the NSCAF was built. Quality checks are also included in the web maintenance tool to ensure the validity of data entry.

Ongoing reconciliation is used to ensure that the NSCAF agrees with other components of the system, including the MSAG, LOGICOS, and municipal databases. Resolution of issues during this process improves the quality of all component databases.

5.2 Reactive Verification

Incidental issues are sometimes revealed during the use of the civic address databases. In particular, 911 calls that do not automatically display complete address and responder information are monitored and forwarded to EMO for investigation. These failures can occur when one of the component databases used to display the Automatic Location Identification is not synchronized with the other databases. Since it is the primary endpoint for the civic address data, it provides an overall check of the quality of the database components of the system.

5.3 User Feedback

As noted at the outset, this document continues to evolve to reflect the improvements in the civic addressing system. Undoubtedly, there are residual issues that require clarification and components that are not fully addressed. One of the main mechanisms for improvement of this document is the input from users. Comments are always welcome and should be directed via e-mail to mailto:geoinfo@gov.ns.ca.

6 GLOSSARY OF TERMS

AAN An Assessment Account Number (AAN) is a unique number assigned by the Assessment Services Division and municipal governments to track tax information related to properties. It is quoted on Notice of Assessment forms and property tax invoices.

Address Range An address range is the minimum and maximum civic numbers assigned to each side of a street segment. Many mapping programs use these values to calculate the location of a civic address.

Address Parity Civic numbers are normally arranged with even numbers on one side of a street, and odd numbers on the other. Address Parity is the pattern of these odd and even numbers along a street segment.

ALERT See LOGICOS.

Aliant Aliant is the primary Local Exchange Carrier in Nova Scotia responsible for maintaining the Alert database. Other Local Exchange Carriers (such as EastLink), provide civic address information to Aliant, who consolidate the information and populate the 911 database.

ATLAS See MARTENS.

Building Centroid The location of buildings in the NSCAF is represented by a point in the map database. This point is located within the Building Footprint and this point is assigned a unique identifier (PntID) for linking information related to the building.

Building Footprint The perimeter of a building when viewed from above. The building footprint in large scale mapping is technically the roofline, rather than the footprint of the foundation.

Civic Addressing System The Civic Addressing System is the integration of physical infrastructure, data, and communication that allow a user to determine the civic address of a location and navigate to that location.

Civic Addressable Point A Civic Addressable Point is a permanent physical location of human activity that is accessible by emergency vehicles.

Civic Address A civic address is the combination of unit number, civic number, street name, street type, street direction, and community name that allow a location to be uniquely identified in the province.

Community A NSCAF community is a medium scale geographic area that encompasses a built-up area or defines an administrative unit. It is generally analogous to a traditional community, and the long term objective is to discontinue the use of the term GSA and to refer to all GSAs as communities.

Database Key The NSCAF is composed of a number of separate database tables that are linked together using numeric identifiers. These database keys uniquely identify each civic point, road segment, street name alias, and community boundary. When the NSCAF was created, the PntID and SegID keys were created by combining the GSA_Key with a sequential number identifying each entity. This approach has been changed, and keys are now sequentially assigned throughout the province, without incorporating the GSA_Key as part of the PntID, SegID, and other NSCAF keys. These keys are generally static, but there are exceptions. This will occur when a geographic object is retired, or when a road segment is split.

Driveway A driveway is a private access for vehicle traffic to an addressable point. It provides access to less than three addressable points.

EMO The Nova Scotia Emergency Management Office is the provincial agency with the mandate to administer 911 services. It is one of the main partners in the development of the NSCAF.

Enhanced 911 (E-911) Enhanced 911 is the ability of a system to automatically display the telephone number, and civic address of a telephone customer, along with the appropriate responder information for that location.

ESN An Emergency Service Number is a unique numeric identifier for an ESZ.

ESZ An Emergency Service Zone is a geographic area serviced by a unique combination of fire, medical and police services.

Gazetteer A geographic database of names of places and other features, typically identifying the location of the feature.

Geographic Object Within the context of the NSCAF, a geographic object is a representation of a physical feature in the database. The fundamental objects are points, lines, and polygons. The NSCAF uses points to represent building locations, lines to represent road segments, and polygons to represent community boundaries.

GeoNova GeoNova is a provincial program that standardizes the creation, maintenance, access and distribution of geographic data for Nova Scotia. It promotes the ideal of collecting data once, and sharing it among all users.

GPS Receiver A Global Positioning System receiver (often referred to simply as a GPS) is an electronic device that uses a network of navigation satellites to determine its location and display its geographic coordinates

GSA A General Service Area is a medium scale geographic area that encompasses a built-up area or defines an administrative unit. It is generally analogous to a traditional community, and the long term objective is to discontinue the use of the term GSA and to refer to all GSAs as communities.

GSA_Key A unique numerical identifier for each community (GSA). See also Database Key.

LEC A Local Exchange Carrier is a telecommunications company that provides local telephone service. The primary LEC in Nova Scotia is Aliant. EastLink and wireless service providers also provide local telephone service.

LOGICOS LOGICOS has replaced ALERT and is the standardized database of telephone customer information including name, address and telephone number. It is a key database that allows Enhanced 911 service to identify a telephone customer name and other data during a 911 call.

Map Layer A Map Layer is a collection of common geographic objects that are displayed together as a single group on a map.

MARTENS MARTENS has replaced the Automatic Telephone Loop Assignment System (ATLAS) and is the internal service database maintained by Aliant to identify the names, addresses, and telephone numbers of Aliant customers. It is one of the primary databases used to create the LOGICOS database for Enhanced 911 services.

MSAG The Master Street Address Guide is the primary database maintained by EMO that identifies the emergency responders responsible for each road in each community in the province, and contains road name, address range, and community name data that are used to locate an address.

Non-addressed Roads Non-addressed roads are unnamed logging roads, trails, and other roads that do not have civic numbers associated with them. Many of these roads are temporary, and there would be a considerable effort to administer the naming of these roads, especially in areas of active logging. Typically, they are privately owned. Long driveways (>100m) are sometimes included to show access to remote sites. These roads are usually derived from the Nova Scotia Topographic Database.

NRN The National Road Network is a federal program for the standardized collection and distribution of road centreline and transportation data for Canada. The Nova Scotia Road Network is a component of the NRN.

NSCAF The Nova Scotia Civic Address File is a centralized geo-referenced database for civic address data in the province.

NSPRD The Nova Scotia Property Records Database is a geo-referenced database for property data in the province.

NSRN The Nova Scotia Road Network is the provincial program for the collection and distribution of road centreline and transportation data for Nova Scotia. It is the source for the road data used in the NSCAF, and supports other databases such as the NSTDB, and NRN.

Phase I A stage of a plan developed in the United States for the implementation of E-911 support for wireless (cellular telephone) calls. Phase I requires that the caller's telephone number and the location of the receiving cellular tower be displayed to the PSAP call taker. The terminology is used with the same meaning in Canada. Nova Scotia has implemented Phase I.

Phase II A stage of a plan developed in the United States for the implementation of E-911 support for wireless (cellular telephone) calls. Phase II requires that the caller's telephone number and the geographic location (e.g. latitude and longitude) of the cellular telephone be displayed to the PSAP call taker. The terminology is used with the same meaning in Canada. The accuracy and confidence required for the location are set in the United States by the FCC; in Canada this would likely be defined by the CRTC.

PID A Property Identification is a unique number used to identify property parcels. It is used to associate ownership and other data related to the property.

PntID A unique numerical identifier for each civic addressable point. See also Database Key.

Point Based Addressing Point based addressing is a method of determining the location of a civic address by specifying its exact coordinate. The coordinate is used to plot a point on a map at the location of the building, driveway, or other addressable point. This is differentiated from Range Based Addressing as it provides a more precise method of determining the location of the addressable point.

Private Road A private road is a thoroughfare accessible by motor vehicles that provides access to three or more addressable points that is not owned by the province or a municipality.

PSAP A Public Safety Answering Point is a facility staffed with 911 call takers designed as a central location for receiving 911 calls. There are four PSAP centres throughout the province.

Range Based Addressing Range based addressing is a method of determining the location of a civic address by interpolating the location using a range of addresses associated with a road segment. The location of a civic address of 25 on a road segment with a range of 1 to 50 would place a point on a map half way along the segment. This provides an approximation of the location, but does not reliably indicate how far the location is set back from the road.

Relational Database A relational database is a computer based system for managing data that uses separate tables to maintain piece of the entire database. These pieces are linked using unique identifiers (keys) to present the data as if it were a single table, but provides a more efficient structure than a non-relational database.

SegID A unique numerical identifier for each road segment. See also Database Key.

Segment See Street Segment.

SNSMR Service Nova Scotia and Municipal Relations was one of the main partners in the development of the NSCAF. It is the custodian of the NSCAF, as well as the related applications and documentation.

Street Segment A street (road) segment is a section of road centreline in the NSCAF that has common attributes (such as name) and generally extends from one road intersection to another.

Street Alias A street may be known by multiple names. The “official” name is assigned by the municipality, First Nations community, or TIR and is generally the name that is posted on street name signage. The street may also be known by other names by the local residents, or there may be variations in spelling. These other aliases provide useful information and are included in the NSCAF.

StrKey A unique numerical identifier for each road name and alias. See also Database Key.

TIR Transportation and Infrastructure Renewal is the provincial department responsible for the management of provincial roads. They update the NSCAF with names and Authority Numbers of roads under their jurisdiction.

Transaction A transaction is an editing operation performed on a database. When updating the NSCAF, each operation that affects a table generates a transaction that is used to track changes and provides an ability to reverse most operations.