Halifax Regional Municipality Cogswell Lands Plan

Design Brief #1

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Halifax Regional Municipality

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Introduction

The Cogswell Interchange is one of the most prominent and controversial infrastructure installations in the Halifax Regional Municipality. Constructed in the late 1960s as part of an urban renewal initiative, the future vision for 'Harbour Drive' was to create an elevated expressway along the Halifax Waterfront that looped the southern edge of the Peninsula and bridged the Northwest Arm to the mainland. The intended impact was to improve the condition of the downtown through the spin-off benefits of large scale construction. Community opposition over the planned demolition of the historic properties lead to the eventual demise of the subsequent phases of the Harbour Drive project, but not until after the construction of the Cogswell Interchange. Perceived as a obstacle disconnecting the North End to the Downtown, and blocking views of the waterfront, the actual incarnation of the interchange functions in a manner that is very much contrary to its intended use. Since that time, the community has struggled with the scale of the Cogswell Interchange, and as the infrastructure reaches the end of its intended lifespan, there has been extensive public dialogue about the future of this important downtown gateway.

Project Inception

A fixture in the City of Halifax since the late 1960s, the Cogswell Interchange has long been a source of public dialogue and debate. In the late 1990s, as the infrastructure approached the end of its anticipated life, the Halifax Regional Municipality began to the process of exploring options for its removal. Starting with a charette at the Canadian Association of Planning Students (CAPS) conference in 1997, Halifax began to imagine how the urban fabric might look without the Cogswell Interchange.

Previous studies such as the 2001 Vaughan Engineering Study focused on the technical and engineering constraints of the project, while others such as the 2004 Cantwell and Company Report looked at the economic feasibility and development potential of the site. As part of the 2006 - 2008 HRM by Design Planning process, public engagement outcomes focused on the need to redevelop the area, and the resulting downtown Land Use Bylaw outlined key urban design considerations. Valuable in their own right, each of these past studies has explored one aspect to the multi-faceted challenge that is the redevelopment of the Cogswell Interchange. In 2013, in recognition of the need to move the project forward, Halifax Regional Council directed staff to take a more focused look at the many implications of removing the Cogswell Interchange. This study, referred to as the Cogswell Lands Plan, is intended to capture a broad and multi-disciplinary snapshot of the technical opportunities and constraints that the redevelopment plan will have. Integrating aspects of engineering design, urban planning, and development feasibility, the Cogswell Lands Plan will provide Council with the necessary background to make informed decisions regarding the future of this critical downtown area.

Site History

The history of the Cogswell Interchange site dates back to the very inception of Halifax itself. While lands to the north of the Halifax peninsula had been roamed by the Mi'kmaq for over 11,000 years, the restricted available of freshwater had been a deterrent to more established usage of the peninsula itself. The adjacent harbour, with its deep waters and open winter access finally drew European visitors in the fifteenth century, who began to fish its waters and explore the shores in earnest. During the sixteenth and seventeenth centuries, settlements and lands floundered back and forth between the British and the

French until the Treaty of Aix-la-Chapelle in 1748. This treaty returned the prominent settlement of Louisbourg back to the French, and highlighted the need for a major British settlement in the area.

In June of 1749, Edward Cornwallis arrived to create the British counterpoint to the powerful fort of Louisbourg. The wide open harbour and rocky shoreline became an optimal location for a British stronghold. Early Halifax, although dominated by the military, also saw its share of shipping traffic, and the waterfront soon become a major source of commerce for the region. In 1750, a proposal to construct a large public quay along the waterfront was defeated, and local merchants instead began to construct individual finger piers and wharves. The commercial waterfront was protected by a series of forts and a larger palisade, and in the early years of Halifax settlement outside this protected boundary was limited.

By the latter half of the eighteenth century, Halifax had outgrown both its need for the palisade protection, and the physical boundary it provided. Warehouses and shipping support buildings were established close to the existing wharves and finger piers, and a bustling commercial and warehousing district evolved. Over the next hundred years, the Halifax settlement grew from a fortress to a town and finally into a City. Much of the economic growth driving the expansion of Halifax was derived from the waterfront, with the military emphasis shifting more towards a merchant shipping focus.

By the mid twentieth century, the Halifax waterfront began the suffer the fate of many emerging post-industrial revolution waterfronts. Merchants moved further away from their port lands, and the desirable neighbourhoods were disconnected from the waterfront. The warehouse and port service infrastructure was now old and falling into disrepair, and the City was struggling with navigating through a circulation network that was already 200 years old. Much of the land adjacent to the waterfront become home to aging buildings, and general urban squalor. This timeframe aligned with a mass migration from downtowns towards the suburbs, which saw residential development, businesses, and commercial moving away from the central business district.

As part of an attempt to re-invigorate downtown and the waterfront, the 1960s saw the emergence of large scale urban renewal. Typically these mega-projects sought to revitalize the downtown through the construction of major vehicular thoroughfares and /buildings. Toronto gained the Gardiner Expressway as an offshoot of this program, and a counterpart, Harbour Drive, was planned for Halifax. This major arterial road would circumnavigate the southern edge of the peninsula, replacing 'derelict' waterfront infrastructure, and connect across the northwest arm to the mainland. Phase one would see the construction of a major new gateway to the City, adjacent to the ongoing construction of

Stakeholder Consultation Outcomes

Due to the technical nature of this exercise, it is intended to focus specifically on the functional opportunities and constraints that will guide the removal and subsequent redevelopment of the Cogswell Interchange. This study will dovetail with work that is presently being lead by the Mayor and the Strategic Urban Partnership (SUP) to build excitement and momentum for any future public consultation on this project in subsequent phases. However, due to the sensitivity of many of the issues surrounding the redevelopment of Cogswell, a series of stakeholder interviews were completed to invite direct and vested input on the project.

Key adjacent landowners were interviewed, including Casino Nova Scotia, Great West Life (Purdy's Wharf), Crombie REIT, and the Department of National Defense (DND) - pending. Other relevant stakeholders consulted included Metro Transit, the Ecology Action Centre, Fusion Halifax, the North End Business Commission, the Halifax Chamber of Commerce, and the Heritage Trust.

Input from the stakeholders varied, due to the specificity of some of their interests. Most of the adjacent landowners were concerned about access to their properties, development potential of privately held lands, visibility, and construction phasing. Many of the Non-Governmental Agencies (NGOs) consulted focused on more topics like the tone and timing of future public consultation, the need for better connectivity and access through and to the site, and the broader implications that the Cogswell Interchange redevelopment will have on transportation on the Peninsula.

Background Review & Existing Context

Several past studies and reports on the Cogswell Interchange are extremely relevant to the Cogswell Lands Plan. Relevant points are summarized below.

Vaughan Engineering Report (2001)

One of the primary considerations first explored as part of the dialog on the future of the Cogswell Interchange included a discussion on the technical feasibility of any proposed solution. It is essential that any redeveloped road layout would have to be technically feasible, given the existing grades and existing and future traffic volumes. In order to explore these questions, in 2001 HRM commissioned Vaughan Engineering Limited (now MacDonnell Engineering) to study the Cogswell Street Interchange. The purpose of the study was to examine the technical feasibility of replacing the interchange with an at-grade network which would still provide essential traffic and roadway services. The final report was delivered to Council in 2001.

The study approached the problem with a three-step solution. The first phase of the study, functional engineering design, generated ten concepts for assessment. Each concept was required to meet two key criteria; the first being technical feasibility; i.e. that the road geometry met HRM requirements for slope and curvature, and the second criteria being that of service; i.e. that the traffic analysis reveal a substantial level of service adequate for the needs of the City.

The second phase of the study looked at the performance analysis of the ten concepts, to determine which performed the best under a traffic analysis simulation. From this analysis a preferred concept was

identified. The third phase of the study explored the implications of the preferred concept including demolition and construction cost, acreage of road, acreage of remaining parcels, potential effects on neighbouring lots, changes to traffic patterns, and probably changes to municipal services including sewer and water.

Functional Engineering Design

The Vaughan Engineering team developed ten concepts for an at-grade road network, all of which were technically feasible and provided an adequate level of service. Four conceptual strategies emerged:

- Single Arterial: A single main road ran north and south and allowed two-way traffic in and out of the central business district (CBD). All parcels created within the Cogswell Interchange would be accessed off of this single arterial.
- Parallel Arterial Streets: A single main road ran north and south and allowed two-way traffic in and out of the CBD. However, a secondary, two way collector street ran parallel to the main arterial and allowed local traffic to access the new parcels.
- One Way Pair System: Two main arterials ran in and out of the CBD, each allowing for one-way traffic; the south bound connecting with Barrington and Hollis Streets, the north bound coming from Lower Water.
- Single Intersection: A large, single, at-grade intersection of Cogswell and Barrington replaced the interchange creating a four-way signalized stop.

All alternatives were then assessed for land area made available, the configuration and position of the created parcels, the grades of all the roadways, the suitability for pedestrian traffic, the suitability for transit facilities, the aesthetic considerations, and the cost. Based upon these additional criteria, one option from each of the four concepts was then approved for further study in the subsequent phase of the project.

Performance Analysis

The Performance Analysis involved establishing the year 2000 peak hour volumes for existing traffic within the study area at four key intersections for both the AM and PM hours. These numbers were then analyzed for performance. The results indicate that the current configuration of the Cogswell Interchange provides satisfactory to excellent service during both peak hours.

AM PEAK HOURS	Signalized Intersections Control Delay (seconds per vehicle)	Evaluation	Intersection Capacity Utilization	Evaluation
Barrington @ Cornwallis	15.9	Very Good	89%	Satisfactory
Barrington SB @ Cogswell EB Ramp	-		61%	Very Good
Barrington @ Cogswell / Hollis Ramps	11	Very Good	54%	Excellent
Barrington @ Water / Cogswell Ramps	4	Excellent	29%	Excellent

PM PEAK HOURS	Signalized Intersections Control Delay (seconds per vehicle)	Evaluation	Intersection Capacity Utilization	Evaluation
Barrington @ Cornwallis	12.8	Very Good	82%	Satisfactory
Barrington SB @ Cogswell EB Ramp	-		41%	Excellent
Barrington @ Cogswell / Hollis Ramps	12.6	Very Good	42%	Excellent
Barrington @ Water / Cogswell Ramps	3.9	Excellent	37%	Excellent

Existing traffic was then redistributed to the four preferred street and intersection concepts. The analysis of the four models revealed that a Parallel Arterial Street Concept, specifically Concept 2 (c), yielded the most favorable traffic flows for both AM and PM peaks. While this concept did not handle traffic as smoothly as the existing interchange, analysis indicates that that it will provide 'good' to 'very good' level of service at all intersections with a projected reserve capacity of 10% - 20%.

Preferred Concept

The preferred concept integrates both an arterial street and a collector street. The Arterial is a 5-lane street, with the middle lane serving as turning and / or median. The right of way should be 30m, with a design speed of 60 km/h. Posted speed should be considerably lower. Projected traffic volumes to be

served will be in the range of 35,000 vehicles per day. The arterial street was recommended to be a two-way, 2-lane street servicing about 7,000 vehicles per day. The width of the street is approximately 11m, allowing for two-way traffic and on street parking on both sides.

With this road network, the preferred concept provided approximately 5.8 acres of developable land, with minimal impact on property not currently occupied by transportation infrastructure and manageable effects on existing abutting land uses. The estimated costs for construction of this option was $9.1 million dollars (2000 figures), which did not include taxes or finance charges.

Cantwell & Company Report (2004)

Cantwell & Company was commissioned by HRM in 2004 to conduct a study to assess the planning process associated with the removal of the Cogswell Interchange Lands and to determine whether or not the project would be financially feasible. The study's goal was to conduct a best practices research to determine how similar projects were approached from a process and implementation point of view, and to assess capital financing models for bringing a redevelopment project to fruition. This was achieved by developing the rational for the reconfiguring of the Cogswell Interchange, identifying lessons learned from six similar case studies, and completing a financial cost / benefit analysis of the project.

Case Studies

Cantwell & Company identified six interchange tear-downs throughout North America which were similar in size and scope to the Cogswell project. These included the Gardiner East Expressway in Toronto, and five other in the United states: the Park East Freeway in Milwaukee, the Central Freeway in San Francisco, the Embarcadero Freeway in San Francisco, the Interstate 30 Overhead in Fort Worth, and the Akron Innerbelt in Akron, Ohio. From the investigations of these six projects the Cantwell Report identified sixteen lessons learned. These included:

1. The case studies all had similar rationale, similar to those espoused by the HRM for the Cogswell Project;
2. a Project Champion is needed to make the project come to fruition;
3. the project time frame can be a lengthy proposition, it is best to allow for 5-10 years;
4. extensive public consultation is essential;
5. a comprehensive traffic analysis necessary;
6. a cost / benefit analysis is a key decision making tool for these projects
7. A Plan is Essential, including master plan and guidelines
8. Consider Adjacent Land Ownership
9. Tax Revenue can Justify the Project
10. Municipal Plan Review and zoning amendments
11. An environmental assessment is essential
12. Know where the municipal infrastructure is located
13. Detailed bidding documents can generate better tender prices
14. Traffic management plans are needed to avoid gridlock
15. Noise, Dust, and Business Interruptions should be Expected
16. Recycling Materials can pay dividends

Financial Analysis

HRM has always indicated that if the Cogswell Interchange is to proceed, it must be self-financing. A major component of the Cantwell report, therefore, was to determine the financial costs and benefits of the project.

The costs of the project were estimated for the dismantling of the existing Cogswell Interchange and the construction of building a new street network and serviced development parcels. The financial benefits calculated included revenue from land sales; increased property taxes associated with nearby buildings due to the removal of the interchange; increased property taxes from new development; capital cost savings associated with not maintaining or repairing the existing interchange; the reduced operating costs associated with an at-grade road network; and the grants and / or subsidies available from provincial and federal sources, or from private investors.

The demolition and construction costs were drawn from the Vaughan Report, coupled with additional information from Maritime Engineering as to potential environmental remediation, and from projected archeological cost data from similar projects. The final estimated cost was $12.6 million. The following table shows the Cantwell break-down in 2004 dollars:

Description	Vaughan	Cantwell	Total
Earthwork and Demo	$1,900,000		$1,900,000
Municipal Services	$2,200,000		$2,200,000
Street Construction	$2,500,000		$2,500,000
Landscaping	$500,000		$500,000
Intersection Signals & Lighting	$500,000		$500,000
Contingency	$1,500,00		$1,500,00
Planning, Design, and Consultation		$500,000	$500,000
Environmental Remediation		$1,000,000	$1,000,000
Archeological Assessment		$2,000,000	$2,000,000
Total Cost of Removal	**$9,100,000**	**$3,500,000**	**$12,600,00**

The financial benefits outweighed the estimated costs. The benefits included revenue from land sales of $14 million; increased tax revenue from neighbouring properties approximating an additional $269,000 per year, and a lowering of existing maintenance costs by approximately $40,000 per year.

Study indicates that federal funding may not be available, but that provincial funding may be available- especially from the Nova Scotia Gaming Corporation, which is very interested in helping to accelerate the removal of the Cogswell Interchange, and would make an excellent financial partner for HRM in this venture. The current configuration of the Cogswell Interchange blocks access to the Casino and removal would increase access to the site and bring in complimentary neighbouring uses.

The conclusion of the report states that the redevelopment of the Cogswell Interchange is financially viable, and can be self-financing.

Redevelopment Strategy and Action Plan

The Cantwell Report concludes with a brief approach to outlining a strategic action plan. The plan identifies best practice steps for beginning this project and recommends that HRM should commit the funds for moving forward with a plan that includes the following:

- Publish a vision for the Cogswell Interchange
- Appoint a project manager for the project
- Refine the cost estimates associated with the project
- Update the cost / benefit analysis
- Present a plan to the public
- Determine the viability of major anchor features (arts centre, provincial law court, convention centre, etc)
- Identify financial partners
- Apply for federal infrastructure funding
- Prepare a master plan and design guidelines
- Solicit public consultation into the master planning process
- Amend the municipal plan and enable fast-track development
- Determine if additional lands need to be acquired
- Prepare a traffic management plan
- Prepare a communications plan
- Prepare a detailed tender package and call for proposals.

Halifax By Design

The HRM by Design process was initiated in 2006 as an outcome of Halifax Council's adoption of the Regional Plan. It was intended to provide an urban design strategy for the regional centre of the HRM, guiding future land use decisions, providing clarity to the development process, fostering high quality design, and acting as a catalyst for positive urban change. The HRM by Design process consisted of extensive public consultation and dialogue, eliciting discussion on the community's vision for Halifax. As part of this process, there was considerable focus on the Cogswell Interchange, and how its future redevelopment would shape and transform both the North End and the Downtown Core.

HRM by Design developed design criteria for ten downtown precincts, including the Cogswell Area. Key aspects of the intention for the Cogswell include:

- the eventual removal of the interchange, and the re-establishment of a historic downtown street grid.
- any future development should focus on a mixture of uses.
- high rise development is appropriate, and relatively large podiums are desired.
- pedestrian scale and comfort is important. Sidewalks should be protected from inclement weather.
- architectural styles should focus on landmark buildings.
- the overall emphasis should be on public access and connection to the waterfront.

Likely due to the quality and quantity of public consultation, the outcomes of the HRM by Design process focus specifically on the public realm character for the Cogswell Precinct. The plan emphasizes a return to a modern traditional and fine grained road network characterized by a vibrant and active streetscape and enhanced waterfront connectivity.

Real Estate & Market Opportunities

To date the consultants have interviewed more than a dozen developers, appraisers and real estate brokers about the Cogswell Project, as well as various landowners around the property (e.g., Crombie/ HDL; NSCAD; Starfish Properties, Westerkirk Hotels; Great West Life Realty Advisors) for insight into current operational issues and future development plans. The team has also reviewed various real estate forecasts in order to provide an assessment of the future potential of the site.

The following points outline some preliminary conclusions about the redevelopment potential of the Cogswell Precinct, and their impact on the redevelopment designs.

1. In general, most real estate developers were very interested in the redevelopment potential of the Cogswell lands. Based on this feedback, strong interest in the purchase of the property(s) is expected as long as the development community is given sufficient warning about the date of the proposal call (i.e. so that they can coordinate this effort with their other development activities).
2. There is general agreement that the future development potential of downtown lies in the creation of a critical mass of multi-family residential housing. In other words, most agree that Downtown can rapidly develop as a neighbourhood over the coming few decades, and that these new residents will inject needed life into the downtown core.
3. The outlook for office space downtown is not that positive. While long term demand (net absorption) should increase as the engineering work on the National Shipbuilding Strategy advances, downtown is at a disadvantage relative to suburban office parks as land prices are higher, property taxes are higher, construction costs are higher, and there is less parking available for tenants and visitors. As well, since the average tenant size in Halifax is 3,000 SF (i.e., HRM odes not have a large number of nationally headquartered companies that occupy 200,000 SF+), it is extremely hard to pre-lease enough space to support the pre-financing commitments for a major office tower. After two decades of inactivity, the new office construction that is currently occurring is primarily to replace old and obsolete office space (e.g., TD Bank, BMO Tower, RBC Tower, etc.). Other than a new office tower that is being proposed for the new Convention Centre or the Westhill on Duke (which will likely replace old obsolete space), we think its extremely unlikely that downtown Halifax will see anymore Purdy's Wharf style office towers in the near future.
4. The hotel market is seeing two new hotels under construction activity in Downtown Halifax at the time of this study (i.e. a business and extended). This new construction is being brought on by a combination of factors including the need to replace old and outdated stock (i.e. Citadel Hotel); projected demand associated with the National Shipbuilding Strategy; and the potential for increased room nights sold associated with the new and expanded Convention Centre. Although details have not yet been released, it is expected that a major convention hotel (i.e.,

400 to 500 room hotel) will be incorporated as part of the new Convention Centre. It is also possible that the Delta Hotel might include some new room capacity as part of the future development of Crombie's Triangle Lands, although until the economics of this project improve, this is not likely to happen. As hotel space can occupy a similar footprint to a multi-family residential building, planning for one will accommodate the other.

5. The retail environment downtown continues to struggle due to a lack of daytime customers, poor parking capacity (and over zealous parking enforcement) and a general shift of critical mass to the suburbs by residential and office tenants. Although the bar and restaurant sector has always been an anchor for downtown Halifax, recent increases in the minimum wage, as well as other factors are all having a negative impact. At the same time, restaurateurs are discovering the potential of suburban locations for new ventures and are now competing with national chains to provide ethnic restaurants and pubs to suburban customers. This sector may recover some as a result of all the new multi-family residential housing proposed for downtown, but this same new development will eliminate many existing parking lots thus eliminating another critical ingredient for business success.
6. For the purpose of this study the following type of development driving demands for the lands within the Cogswell Precinct are expected:
    a. **Residential.** The development plan should place a heavy emphasis on multi-family housing, with a majority of the units developed as rental housing. The focus on rental housing means smaller average unit sizes and lower allowable parking ratios (0.7 stall per unit). To the extent that some of these residential buildings are built as condominiums, the average size would likely increase, as would the parking ratio (1.25 stall per unit).
    b. **Office**. New office space will likely follow the format used at the Trillium Building on South Park Street: ground floor retail, one level of office space on the second floor with residential above.
    c. **Retail.** Requiring active ground floor retail space is a reasonable request. It is expected that the ground floor of most, if not all buildings should have an active retail use.
    d. **Hotels**. It is likely that HRM could expect one or two more hotels built in the downtown during the build out of the Cogswell Precinct. The Halifax market has been a strong one for hotels over the past few decades, and the issue has always been the lack of available land downtown.
    e. **Institutional.** It is possible that a government institution might want space in one of the proposed buildings for a new police station, art gallery, law courts building, etc. The redevelopment plan should accommodate this potential, although the probability of it happening is hard to predict.

Project Vision & Guiding Principles

When the Cogswell Interchange was originally designed, it was part of a larger downtown revitalization initiative. It was the 1960s, and the Canadian downtown was suffering the impacts of suburbanization. In the post-war boom, Canadians fell in love with their automobiles, and flocked to the suburbs at astonishing rates. Businesses and retail followed, leaving thriving central business districts to struggle with this new urban paradigm. To counteract the decline of the downtown, the thinking of the day conceptualized the idea of the mega-infrastructure project. Super roads sprang up, designed to funnel cars and traffic as efficiently as possible into the downtown core; bringing in consumer traffic and dollars. The Gardiner Expressway (Toronto), Park East Freeway (Milwaukee), and the Embarcadero Freeway (San Francisco) were notable projects of this era. Not to be left out, Halifax too had its own version of the mega project. Harbour Drive was intended to circumnavigate the peninsula, connecting the MacDonald Bridge along the southern waterfront and across the Northwest Arm to the Mainland. The Cogswell Interchange was the first phase of this project.

It was the classic 1960s dream project. Significant investment and infrastructure creating a fast and direct thoroughfare to and through the downtown for the automobile, with the pedestrian and urban design implications given little or no consideration. Fortunately for the waterfront, the project was halted after the first phase, acknowledging the need to preserve the Historic Waterfront properties. In the aftermath, Halifax was left with a visible and large scale legacy of both this attempt at urban renewal, and the resulting need for heritage protection.

In the forty-five years since the Cogswell Interchange was constructed, urban renewal and downtown revitalization have come a long way. Smart planning principles such as transit-oriented development (TOD) emphasize the integration of mass transit and active transportation into the public realm, creating walkable and bikeable spaces and offering alternatives to the single occupant vehicle. Transit-oriented development success stories now dominate urban planning literature, offering spin off benefits that range from downtown renewal to improved air quality and public health.

In spite of these clear advantages, transit-oriented development is not without its limitations. Higher than average housing costs can occur due to the desirability of the neighbourhood. This can lead to the creation of an exclusive community that is out of reach to lower and middle income families; those who could directly benefit from the transit integration the most. In practice, many case studies on TOD demonstrate transit-***adjacent*** development (TAD) instead, where the integration of transit into the neighbourhood only occurs at a surface level and the automobile is still the primary focus. One of the key criticisms of TOD is that, despite its emphasis on alternative transportation and the public realm, it continues to be a philosophy that focuses on the design of the automobile spaces first. So what if that were all to change?

The intention of the Cogswell Interchange Project was to revitalize the downtown through the enhanced connection of vehicles in the City. The result was almost the opposite, where large infrastructure disrupted entire neighbourhoods and created a significant disconnect between the downtown and the North End. The focus on designing for vehicles did not meet its intended objectives, and Halifax has been left to ponder an urban fabric around this significant obstacle, while re-imagining a future without it.

The vision for the redevelopment of the Cogswell Lands seeks to redefine the idea of urban renewal and multi-modal transportation by designing for the pedestrian first. Road capacity and safety **must** be paramount, ensuring that existing and future traffic volumes are accounted for in an efficient manner. This can be accomplished without focusing primarily on the car as the driving factor in the design. The exercise for the Cogswell Lands must consider pedestrians and cyclists first, re-establishing visual and physical linkages through and to the site, the adjacent neighbourhoods, the waterfront, and the downtown. The public realm must be the primary consideration, developing vital and vibrant spaces that support and encourage alternative forms of transportation in meaningful and future-forward ways. Transit will be integrated into the urban form with dedicated facilities that give it a strategic advantage over the single occupancy vehicle. By turning the original design intent for the Cogswell Interchange on its head and designing for the car second, Halifax has the opportunity to create a new paradigm for smart urban development and rectify a mistake that has overshadowed the waterfront and the North End for almost fifty years.

This vision for the Cogswell Lands can be expressed through three primary guiding principles, connectivity, sustainability, and community.

Connectivity

The Cogswell Precinct will connect the City of Halifax, north end to downtown, and Citadel to the waterfront. Pedestrian connectivity will be paramount, this is a space to walk to and walk through. The road network will be designed such that traffic volumes are accommodated in a character appropriate to the context of the study area. No longer a super highway or an interchange to no where, the streetscape is urban, vibrant and lively. On-street parking frames appropriately-size road cross sections. Generous sidewalks define a pedestrian-scaled public realm bordered by cafes, restaurants and commercial activity that spills outdoors. Wherever possible, visual connections are introduced and strengthened; through the articulation of a landmark building at a key visual terminus along Barrington Street, or the connection of a pedestrian view shed down to the waterfront.

Transit Oriented Development

The reduction of single vehicle trips to and from Downtown Halifax is an important sustainability goal for the HRM. The Cogswell Lands Plan should emphasis transit oriented development by working closely with partnering organizations like Metro Transit and the development community to integrate innovative approaches to modern transportation. Looking a major transit hub, either on-street, off-street, or a combination thereof will encourage local residents to leave their cars at home, and will service those arriving in the urban core. Accessible, below-grade public parking will support visitors to the waterfront who wish to park and walk to any of the nearby destinations.

Traffic Calming

The existing Cogswell Interchange feels like a highway. Generous curves and wide lanes encourage speed and discourage other uses. Traffic calming strategies like the narrowing of streets, the tightening of curves, on-street parking, and the realignment of the road to a more urban character will encourage slower speed traffic moving to and through the site.

Sustainability

The redevelopment of the Cogswell Interchange is an opportunity for true urban renaissance. Literally from the debris of this interchange a new neighbourhood will be created, and the chance to showcase the very best of emerging ecological technologies should not be missed. Sustainability lies at the integration of engineering, urban design, and economics, and as such these disciplines should guide informed decision making in the Cogswell Precinct.

LEED-ND

The creation of a true neighbourhood so close to the urban core of Halifax has incredible potential for the community. The addition of new residential and mixed use units will bring activity and vibrancy to the downtown, and will help to reconnect the existing residential neighbourhoods in the North End. In considering the Cogswell Precinct as a neighbourhood, consideration should be given to pursuing accreditation under LEED-ND. Still a relatively new program in Canada, the ability to integrate sustainable design and smart planning principles in a meaningful and measurable way has incredible value on a civic scale.

Stormwater Management

Impervious surfacing is one of the most challenging modifications in the urban environment. The reduction of road surface area in the Cogswell Precinct will have benefits in encouraging infiltration of stormwater. Even in an urban context like the Cogswell, rain gardens and permeable paving solutions can add richness and character to vibrant public open spaces. Smart and sustainable stormwater design can reduce loads at the sewage treatment plant without detracting from the form or function of the public realm.

District Energy

The existing sewage treatment plant produces waste heat during the treatment process, This heat could be captured and applied to a district energy model servicing the emerging Cogswell neighbourhood. Future development could tap into a cost effective, reliable, and sustainable source of energy that would also have economic value to the provider. Encouraging the formation of such a strategic partnership should be considered as the planning process advances.

Community

The construction of the Cogswell Interchange was intended to transform downtown Halifax. Transform it did, but not in the way the designers originally intended. This is the second chance for the Cogswell to exceed its original expectations, and function as a catalyst for meaningful urban renewal. The third guiding principle for the plan must be community, using physical infrastructure construction as a trigger for the re-establishment of neighbourhoods. Bridging the gap between the North End, the Downtown, and the waterfront, the Cogswell Precinct isn't just making a new neighbourhood, it is reconnecting an entire community.

Public Space & Amenities

Memorable public spaces define the character of a City. The High Line, Central Park, Times Square - these are the spaces that create New York City. The redevelopment of Cogswell is not just an exercise about road layouts and development footprints, but rather about the fabric of public space that is the background matrix. Using this project as a showcase of Halifax's very best public spaces, through art, interpretation, activities, and amenities will create a destination neighbourhood. Residents will want to in this precinct, Haligonians will want to visit, and tourists will flock to the area. The proximity of the Casino, the Citadel, and the waterfront are all important existing assets that must form the foundation of an exceptional public space system that clearly defines the northern gateway to the Downtown, and sets the bar high for the public realm.

Green Roofs & Urban Food Production

As public health issues continue to weigh heavily on our community, the integration of mitigation strategies becomes more and more essential. Community gardens foster a sense of cooperation, beautify the neighbourhood, reduce the urban heat island, and provide access to safe and affordable fresh produce. Even in a context as urban as the Cogswell, green roof spaces can connect communities and help improve public health.

Affordable Housing

Affordable housing serves a segment of the population that is often at a disadvantage when it comes to finding suitable accommodation. Typically, lower income areas are clustered together, far away from desirable locations like the waterfront. One of the primary constraints of modern transit oriented development is its tendency to drive up property values, moving it out of reach from those who would most directly benefit. The integration of dedicated affordable housing as a primary tenant of the Cogswell Precinct is an important element of the overall community affordable housing strategy. A diverse and dynamic neighbourhood will add vitality to the downtown, and provide access to areas of the City that are often left to the higher income earners. One of the original intentions of the Cogswell Interchange was to replace urban squalor, and what happened is lower income families were displayed and disrupted. The establishment of a new and diverse community can ensure a similar mistake is not made in the future.

Concept Options

The three concept options presented below were developed using the guiding principles for this project. Each concept emphasizes different priorities however. Some of the immutable 'givens' that drive all the concepts include:

1. Automobiles are a necessary reality and must be accommodated in all designs.
2. Pedestrians are the focus of any new plan. To this end, grade separated roads are discouraged where possible. The thoughtful and future-forward mixture of cars and pedestrians is encouraged.
3. Transit is the future of downtown and must feature heavily in all options.
4. Phasing for the removal of the interchange and construction of new roads and development blocks must be carefully considered in the analysis. The entire Cogswell district cannot be shut down in order to realize the future plans. All plans must consider staging of construction/demolition.
5. The sewage treatment plant (STP) and associated infrastructure must be dealt with in a sympathetic way (i.e. relocation is not an option so finding appropriate strategies to make it a positive urban design feature are encouraged).
6. The solutions must be ready-made for Halifax. They must recognize the scale, special urban design issues, and special qualities of the city that make it unique.
7. The new district must connect the waterfront to the east with the city to the west.

Option #1: Urban Extension

Option 1 focuses on extending the urban grid of downtown from the south all the way to the sewage treatment plan. The focus of this plan is ***pedestrianizing*** a new urban district with typical 'Halifax-scale' blocks. While road traffic capacity and travel time have been maintained, the focus of this plan is clearly on the pedestrian and alternate forms of transportation like active transit and cyclists. The plan showcases a new urban greenway, the extension of the Granville Mall into a new Granville Park, urban street cross sections with bike lanes, on-street parking and wide sidewalks, a transit block, and five "Halifax scale" development blocks. The plan focuses on walkable, pedestrian oriented urban spaces.

In this plan, Barrington Street becomes the main transportation spine into the city diverting its routing to the old Upper Water Street location and freeing up the 'old' Barrington Street corridor as a new urban greenway (which could also have transit applications). Switching from a two road entry into the city to a one road entry frees up a significant amount of land for open space and development. The new configuration promotes significantly improved traffic distribution to Brunswick Street, Hollis Street, Cogswell Street and Upper Water Street. Each intersection becomes a single decision point on Barrington Street, distributing the traffic efficiently through the city. This option presents a 'transit block' in the centre of the new Cogswell District with a dedicated transit street and efficient transit oriented development centrally located in proximity to the Scotia Square, Purdy's Wharf, the Casino and Ferry Terminal. This option also extends the Granville Mall into a large new urban park surrounded by the new transit block making it much more usable and relevant. The urban greenway terminates at the transit block and

Granville park. On-street bike lanes and on-street parking are found on every street. The Barrington Corridor would have a wide (20') urban streetscape sidewalk with ample urban furnishings, street art and wayfinding signage. A gateway roundabout would clearly define and showcase the new entry into the downtown. In this option, the waterfront boardwalk would effectively enter into the sidewalk of the new urban blocks. Signature urban parks are located in several areas of the district. The sewage treatment plant (STP) is given more room for expansion, however, strict architectural design controls and the mixing of other uses with the STP would be a requirement for the future. A new waste to energy plant would allow for district heating in the new Cogswell District.

Option #1 provides the highest number of individual block developments (five blocks) compared to the other options. This option also provides the most underground parking (950 spaces per level) and the 2.1 km of on-street parking (~350 spaces).

Traffic Impacts

The critical traffic locations for the Option 1 scenario primarily focus around the connection of Cogswell Street to Barrington Street. Similar critical movements exist today where the Cogswell Street grade separated ramp connects with Barrington Street. This merge area is frequently congested as a result of traffic queuing from the Cornwallis Street intersection and is frequently impacted by the merge movement from Upper Water Street and queuing from the Macdonald Bridge. The preferred approach will be to develop design solutions through the Cogswell interchange area assuming that downstream congestion issues are resolved and that the new intersections will accommodate traffic at an acceptable level of service.

Doing so requires careful consideration of intersection and roundabout capacities and progression, particularly at the intersection of Cogswell and Barrington Street, as well as at the intersection of Barrington Street and the Hollis Street Extension (Upper Water Street). The most critical movement will continue to be the outbound left turn movement from Cogswell to Barrington Street in the PM peak which would likely require a double left turn lane at a signalized intersection, or a two lane entry to a roundabout, should it be feasible to accommodate a roundabout at this location.

Under this option, the impacts of this critical PM peak left turn may be reduced be providing a higher capacity & more efficient intersection at Barrington and Cornwallis. This intersection may be reconfigured as three leg signalized intersection or as a roundabout. The more efficient this intersection operates, the more likely some traffic will elect to use Brunswick Street and Cornwallis to access Barrington Street as opposed to making the higher volume left turn from Cogswell to Barrington. As significant traffic merges together at various locations during the PM peak, a high level of importance must be placed on merging and weaving areas to reduce inefficiencies and safety risks in the network. The key movement that will require an auxiliary lane is the Hollis Street extension onto Barrington Street.

With the exception of the above noted locations and capacity requirements, it appears that traffic movements through the Option #1 road layout can generally be accommodated at acceptable levels of service with road and intersection capacities consistent with the types of developments being proposed. On a broader scale, future road network improvements in the area of the Halifax Commons, Bayers Road, and other HRM initiatives may result in additional traffic being diverted away from the Cogswell area. Such diversion will result in less chances of traffic congestion through these critical intersections and as a

minimum, will provide increase opportunities to distribute peak hour volumes over a greater number of appropriate roadways.

Development Statistics:

Cogswell Interchange Summary of Development Options	
	OPTION 1
Total Land Area Created	**438,005**
Less Green space	(35,610)
Net Land for Sale	402,395
Divided by	43,560
Total Acres of Land	**9.2**
Total Gross Floor Area	**1,631,200**
Less GFA Owned by Others	(312,700)
Gross Floor Area Owned by HRM	1,318,500
Value per SF	$28.00
Approximate Gross Sales Proceeds	**$36,918,000**
Private Parking (per level)	950
Public Parking (on-street)	350
Total Parking	**1,300**
New 2 Lane Road (in Meters)	1,026
New 4 Lane Road (in Meters)	1,094
Total Meters of Road	**2,120**

Option #2: Mid-Grain Blocks

Following Option 4 (Mega Project), Option 2 provides the next course grained level of urban development. This option presents three large urban blocks surrounded by Barrington Street to the west and Hollis Street to the east. One of the challenges with this option is that Barrington and Hollis are single loaded streets (i.e. there are buildings only on one side of the street); a function of trying to fit two streets in the narrow corridor versus the one street solution shown in options #1 and #3. This option effectively extends the grid of the city into the three larger development blocks. This option features a large urban park at the terminus to Granville Mall as well as several smaller urban parks in the areas of sensitive sewage treatment plant (STP) servicing infrastructure. This option also has full on-street parking and bike lanes but no dedicated urban greenway. In this option there are several large slivers of un-developable land; a result of the Hollis and Barrington configuration. This option provides little expansion potential to the STP and the proximity of Cornwallis Street to the new Barrington/Hollis roundabout could be problematic for getting traffic onto Brunswick Street. The block between Cogswell and Cornwallis is about double the length of the typical Halifax block. The old Proctor Street connection could be possible in this configuration.

Traffic Impacts

The Option #2 scenario provides a much more direct north / south corridor along the Harbour and shifts the traffic priority to providing a high level of traffic progressing along the linear corridors. In general, the option results in fewer primary decision points and is likely to result in an environment that feels more like an arterial thoroughfare rather than an urban road network. With this comes certain efficiencies in progressing traffic through the Cogswell area, though it is also likely to promote higher speeds.

This option also diminishes the opportunities to redirect some traffic to the Brunswick / Cornwallis route to Barrington Street. The intersection at Barrington, Cornwallis and the Hollis Street extension becomes the primary location to connect Barrington Street to the Hollis Street extension, therefore this intersection or roundabout becomes a high volume multi-leg intersection. That said, the road layout may provide some opportunities to distribute the left turning traffic from Cogswell Street between Barrington and the Hollis Street extension reducing the impacts of a single high volume left turn movement. Similar to Option 1#, areas outside of the critical peak movements appear to operate at relatively good levels of service with a reasonable level of road infrastructure in place.

Development Statistics

Cogswell Interchange Summary of Development Options	
	OPTION 2
Total Land Area Created	**409,000**
Less Green space	(77,600)
Net Land for Sale	331,400
Divided by	43,560
Total Acres of Land	**7.6**
Total Gross Floor Area	**1,193,700**
Less GFA Owned by Others	(422,800)
Gross Floor Area Owned by HRM	770,900
Value per SF	$28.00
Approximate Gross Sales Proceeds	**$21,585,200**
Private Parking (per level)	730
Public Parking (on-street)	400
Total Parking	**1,130**
New 2 Lane Road (in Meters)	1,342
New 4 Lane Road (in Meters)	1,058
Total Meters of Road	**2,400**

Option #3: Suburban Approach

Option 3 provides four development blocks and is a partial amalgam of option #1 and #2, with curvilinear streets, a single Barrington Street that allows for double loaded development, and the same multi-use trail corridor as option #1. One of the key differences with option #1 is that Barrington, Cogswell, and Hollis Street meet at a single roundabout providing one signature gateway element but also a central convergence point for downtown traffic. With this option, there's not as much open space and some of the roads are more challenging, with steeper grades and proximity of intersections to the central roundabout. Rather than the transit block found in option #1, option #3 extends the functionality of Barrington Street as an extended transit street, effectively creating a large transit block around Scotia Square. Like Option #1, the sewage treatment plant (STP) lands are expanded and design guidelines are instituted to improve the character of future mixed use buildings on this site.

Traffic Impacts

Option #3 concentrates the majority of intersecting traffic at the Cogswell Street roundabout at Barrington Street, resulting in relatively high volumes approaching the roundabout from the east (Hollis) and west (Cogswell) sides. Careful consideration of entry and circulatory volumes within the roundabout will be required minimize entry delays as a result of heavy volumes already within the roundabout.

The location and elevation of the roundabout at this location will be critical as overall grades of Cogswell are challenging. Flattening of the roundabout at this location will require steeper grades outside of the roundabout. That said, there are opportunities to design the roundabout to work with the Cogswell Street grades to minimize the grade related impacts resulting from the size of the roundabout.

In most areas, and particularly in high volume urban areas, progression of vehicles and respecting the functional / operational areas of intersections and roundabouts is important. Option #3 creates some challenges with respect to spacing between intersection and the ability to logically guide a driver through a road network.

Development Statistics

Cogswell Interchange Summary of Development Options	
	OPTION 3
Total Land Area Created	**441,400**
Less Green space	(25,900)
Net Land for Sale	415,500
Divided by	43,560
Total Acres of Land	**9.5**
Total Gross Floor Area	**1,475,500**
Less GFA Owned by Others	(191,900)
Gross Floor Area Owned by HRM	1,283,600
Value per SF	$28.00
Approximate Gross Sales Proceeds	**$35,940,800**
Private Parking (per level)	850
Public Parking (on-street)	330
Total Parking	**1,180**
New 2 Lane Road (in Meters)	961
New 4 Lane Road (in Meters)	1,089
Total Meters of Road	**2,050**

Option #4: Mega Project

As outlined in the RFP, one of the potential solutions to be explored was that of a large grained approach. The consulting team explored the potential of a large grained block solution that would require a mega development catalyst like a new stadium or convention centre. During the interviews, it became evident that there is presently little desire or interest in a mega project for Halifax which could benefit from the Cogswell lands. In reviewing precedent from other communities who have initiated similar projects, the economic realities of such a project raise significant concerns for the study team. The introduction of a single, large format structure with restricted types of activities and consumptive parking requirements tends to pose economic, urban design, and connectivity challenges to a downtown neighbourhood. The lack of constant activity, the disruption of pedestrian and visual connectivity, and the business case required render these projects difficult, if not impossible to justify.

Furthermore, the phasing of road networks to accommodate one large block would be very very difficult and would most likely require the closing down of the entire interchange and construction of new roads over a 1 -2 year period. The challenge with phasing, the issues with urban design, connectivity, and economics, and lack of any specific mega-project eliminated this option for consideration in this study.

Servicing & Civil Implications

As outlined by the existing services drawing in the appendix, there is a significant amount of underground servicing within the study area, including storm and sanitary sewer, water mains, power duct banks (NSPI), telecommunications (Aliant), and gas lines (Heritage Gas). In addition to local sanitary servicing of the existing buildings, the regional Harbour Solutions sewage treatment plant (STP) infrastructure also crosses the site. The redevelopment of the area will involve the reconstruction of existing services, as well as the installation of new infrastructure to service the new development parcels. For the most part, existing services can be relocated to suit the new street layouts. However, there is critical infrastructure, identified in the initial phase of the project which will be costly and difficult to relocate. The three options explored in this phase of the study have considered the following primary constraints:

- **Primary Gas service in the area of Barrington and Cornwallis Streets**. The 10 inch diameter steel gas main runs along Barrington Street to Cornwallis and then westerly to service Dalhousie and the VG hospital.
- **Harbour Solutions sewage collection tunnel and Cogswell Street access shaft**. The 2.2 meter diameter tunnel follows Lower Water Street across the interchange to the southeast corner of the sewage treatment plant. The tunnel is approximately 26 meters deep with an access shaft between Upper Water Street and Barrington Street.
- **Harbour Solutions combined sewer overflow (CSO) chamber and effluent pipe.** This major structure is located at the corner of Upper Water Street in the Casino area. The collection system for the area is directed to the CSO chamber and then to the tunnel via a drop structure at the access shaft. Additionally, the effluent pipe from the Sewage Treatment Plant is located adjacent to the CSO chamber.

In addition to the major infrastructure noted above, servicing is located within existing roadways, generally at the perimeter of the site on Upper Water Street, Cogswell Street, and the south end of Barrington Street. The redevelopment will require adjustments and replacements along existing roads.

Preliminary road profiles have been developed for the Option #1 primary routes to provide a high-level review of street grades and servicing impacts. Since the existing Hollis and Barrington route crosses the site at a low elevation at the core of the interchange, new road alignments will generally be higher than these existing elevations. For all options, a direct connection from the west end of Cogswell Street to the waterfront properties is desirable, resulting in a roadway profile consistent with other Halifax east-west streets such as Duke Street. At a high level, the grading and servicing considerations for each option are similar.

Each option will require:

- Relatively steep east-west connector roadways (ranging from 6% to 12% grades).
- Reconstruction of existing trunk water and sanitary services that follow the alignment of Cogswell to Barrington to Hollis. Services would be located in a new east-west connector roadway or easement.
- Adjustment of existing manhole structures within roadways at the perimeter of the area including Upper Water Street, Cogswell Street and the south end of Barrington Street.
- New servicing solution for the Trade Mart building.
- New storm drainage system for all roadways directed to two existing outfalls. Stormwater management within the new developments will be required to manage flows.
- Sanitary collection system directed to the existing CSO chamber.
- Water system to provide domestic and fire flow protection
- Power, Gas, and Telecommunications infrastructure.

Traffic Implications

For the purposes of discussing traffic, the Cogswell Functional Area is defined by the road network in the vicinity of the Cogswell Interchange that is expected to be impacted by the proposed changes to the interchange. This includes discussions of the Macdonald Bridge, intersections in the vicinity of the commons, and access to Spring Garden Road among other infrastructure.

Capacities

In urban areas, the vast majority of roadway capacities are influenced by the presence of signalized or stop controlled intersections, or other major infrastructure elements such as the Macdonald Bridge along a travelled route. For the purposes of this study, d an average capacity general capacity of 1,000 vehicles per lane per hour under uninterrupted free flowing conditions has been used (assumes no traffic control). Where traffic control devices are in place, the capacities will be factored by the approximate allocation of green time for that movement (i.e. if 60 seconds of green time area allotted to one movement of a total of 100 second traffic signal cycle, the capacity of the approaching lanes is 600 vehicles). While these estimates are relatively crude, they illustrate some important capacity features within the Cogswell Interchange.

A well designed interchange or general road network will ultimately balance capacities throughout the network at a relatively consistent level and optimally at a utilization level that maximizes usage and minimizes delays during the peak hours of flow. In theory, if a roadway is underutilized during the peak hours, then there is excess infrastructure in place which carries a cost associated with the construction and maintenance of the unused infrastructure. Frequently this excess capacity is strategically put in place to accommodate future growth, though in some cases, the additional capacity is not warranted for existing or future growth. If a roadway is over utilized, drivers experience queues and delays which increase the costs of fuel, emissions, and other factors. In both scenarios, money is not effectively used when the transportation infrastructure is either under or over utilized.

A logical discussion through the high level capacities of the Cogswell Interchange and its various connections includes looking at a variety of locations.

1. North of the intersection on Barrington Street, all inbound and outbound traffic is funneled into two inbound and two outbound traffic lanes. Parallel routes are available but are generally not directly related to traffic through the Cogswell Interchange.
2. Inbound traffic on Barrington is generally restricted by the two lane cross section on Barrington Street north of the Cornwallis intersection, while a significant amount of traffic utilizes Artz Street and Brunswick Street or chooses other routes such as Gottingen or further west. There are few other inputs to inbound traffic approaching Cogswell suggesting that the two lane capacity, which is somewhat reduced due to the traffic signals at Cornwallis, flows into the Cogswell interchange which generally has four or five usable traffic lanes. This would suggest that overall capacity utilization of the existing interchange is in the range of 40-50%.
3. Inbound traffic further funnels back down to three lanes (one on Barrington and two on Hollis – both of which are again somewhat reduced due to traffic control and the driving environment).
4. Outbound traffic is generated from Lower Water Street and Barrington Street (functionally one lane each) and the one lane Cogswell Street on ramp to Barrington Street. Again the Cogswell interchange can accommodate four to five lanes of traffic on its various parts suggesting utilization in the range of 60%.
5. During the AM peak hour, there are approximately 3,300 vehicles entering the interchange's functional area and 2,900 leaving the area. In the PM peak, there are approximately 2,600 vehicles entering the area and 3,800 exiting the area. This suggests about 400 vehicles are destined for parking spaces within the Cogswell area during the AM peak and 1,100 enter the road network from parking spaces during the PM peak. This further suggests that the PM peak hour experiences more intense peaking characteristics, which is consistent with typical traffic travel patterns in urban areas.
6. A review of past full day, or week long traffic counts indicated that the AM and PM peak hours account for approximately 13% of total daily traffic through primary commuter routes in the downtown areas of Halifax and Dartmouth. This would suggest that the average daily traffic through the Cogswell Interchange is in the range of 55,000 vehicles per day [(3300 veh + 3800 veh) / 0.13].
7. If it is assumed that the interchange itself accommodates four full lanes (conservative) of uninterrupted traffic in each direction, this would suggest a capacity of approximately 62,000. If it is assumed a full five lane interchange capacity in each direction, the interchange could in

theory accommodate around 77,000 vehicles. These numbers would equate to a interchange capacity utilization of approximately 75 to 85% of its potential capacity based on the available number of lanes.

8. If the vehicles that are currently destined to and from the waterfront parkades at the Casino, Purdy's Wharf and hotel are removed (as these vehicles do not use the actual interchange itself) these numbers would drop to a capacity utilization of between 55 and 70%.
9. Based on the various lines of evidence in this discussion, it appears that the interchange operates somewhere in the range of 60 – 70% of its potential capacity. Please note that these estimates are preliminary only and are based on a number of very general assumptions.

Peak Periods for Analysis

Clearly, the critical peak hours for consideration under this study are the AM and PM peak hours of traffic. Other traffic periods such as event peaks are also considered important, but generally are not as critical as the regular weekday commuter peaks.

Existing Traffic Volumes

For the purposes of this study and based on recommendations from HRM, a baseline traffic scenario represented by the 2008 Downtown Peninsula Traffic Study has been applied, which represents conditions through the Cogswell interchange and individual intersections well. The 2008 numbers were compared to more recent 2011 and 2012 volumes at select locations throughout the Cogswell area and this comparison shows that volumes are still relatively similar, which is consistent with HRM estimates that suggest traffic growth has been relatively low over the past 5 years.

Existing Traffic Constraint Locations / Key Movements

During the AM peak, traffic generally distributes itself through a variety of destinations resulting in diminishing volumes as drivers select different routes of travel. This primarily distributes high volumes on Barrington Street (from the Macdonald Bridge and from Barrington Street north of the study area) to a variety of directly destinations. During the PM peak hour the opposite occurs where a variety of traffic streams converge onto Barrington Street and proceed north either to the Macdonald Bridge or continuing north on Barrington Street.

As a result, many of the critical traffic constraints occur at major intersections where major streams of traffic come together.

Archeological Implications

A significant amount of demolition debris and fill was removed from the study area to facilitate the construction of the Cogswell Interchange. Records preserved in the HRM and provincial archives do not make it clear where the material from the over 150 demolished buildings was taken. Records indicate that just under $2,000 worth of fill from the area was removed and sold, but in excess of $8,000 worth of rock fill was brought in to dramatically change the landscape of the site. Specific notations were made regarding the salvaging of cobbles from Bell Lane, and the piece-by-piece dismantling of one end of both the Joseph Simon and Collins Bank buildings. It is not clear whether the building material from the other buildings was simply pushed over and used as fill, or whether it was hauled to a dump at no additional

expense. In the absence of recorded hauling and dumping fees, the complete removal of this material may be the less likely scenario.

High-quality topographic data of the pre-development interchange area could not be found in the course of this study. Therefore the exact nature of the changes to the local landscape cannot be determined. Given the general contours of the land in oblique aerial photographs taken in the first half of the twentieth century, the original landscape was likely a relatively smooth-contoured continuation of Citadel Hill. This suggests that the low underpass adjacent to Morse's Teas and Hollis Street was dug or blasted into the hill, while many other areas were built up.

The original city wall in this area was a very short-lived wooden structure that most likely ran down Citadel Hill just south of the modern Cogswell Street. These early maps are highly varied in accuracy, but on average most place Grenadier Fort partially beneath Scotia Square and possibly extending into the Interchange footprint near the Cogswell/Barrington intersection. Artifactual material from this period has a high probability of having survived, but most likely in a context disturbed by subsequent nineteenth and twentieth century activity. It is possible, but not likely, that structural evidence of the wall and forts has survived in proximity to the Interchange.

Two layout scenarios are currently being considered in relation to the Interchange redevelopment. The first is a "fine-grained approach," allowing low to medium intensity development with a street grid similar to the small-scaled and narrow streets in the downtown core to the south. The second is a "bookend to the downtown" approach allowing medium to high density development on larger streets and lots.

Archaeologically, both scenarios represent equal risk to potential archaeological deposits within the study area. Although historically speaking the "fine-grained" approach is more in character with the original layout of the city, either scenario will result in ground disturbance that will encroach upon land of high archaeological potential.

RECOMMENDATIONS AND CONCLUSIONS

A great deal of ground disturbance has occurred to create the Cogswell Interchange, and it is clear that some areas will likely rest on bedrock or culturally sterile soil, as records indicate that some stone footings and wharf timbers were removed. The relatively small expenditures for these removals, however, suggest that only small areas were stripped bare of cultural material. In areas where roadbeds and other structures were built up with fill, there is very high potential for archaeological material to have been preserved, though whether it remains undisturbed or has been removed from its original context will not be known until excavations commence. It is expected that archaeological resources within the impact area will fall into three categories: commercial, residential, and military.

The scale of the Interchange and the likelihood of pockets of undisturbed or partially disturbed archaeological material scattered throughout the impact area means that an archaeological testing strategy would prove extremely impractical. Instead, it is recommended that an archaeologist be consulted during planning prior to demolition in order to implement archaeological monitoring protocols from the beginning. This will ensure that last-minute archaeological salvage will not delay the demolition and reconstruction projects. In addition to mechanical demolition, geotechnical testing and the removal of hydropoles can often raise archaeological concerns

It is also recommended that a meeting should be arranged with the Culture and Heritage Development Division of the Department of Communities, Culture and Heritage in order to firmly implement on-site protocols for all phases of work, particularly those involving significant ground disturbance.

Depending upon the scale of the ground disturbance activity, monitoring can usually be conducted by only a few archaeologists, with the team expanding as needed to mitigate archaeological material when it is encountered. When heavy equipment encounters archaeological resources, a complete halt in on-site machinery is not usually called for. Instead, other less sensitive areas can be worked by machinery while an archaeological team works to mitigate the encountered resources. Archaeological monitoring is recommended only for the duration of ground disturbance activities.

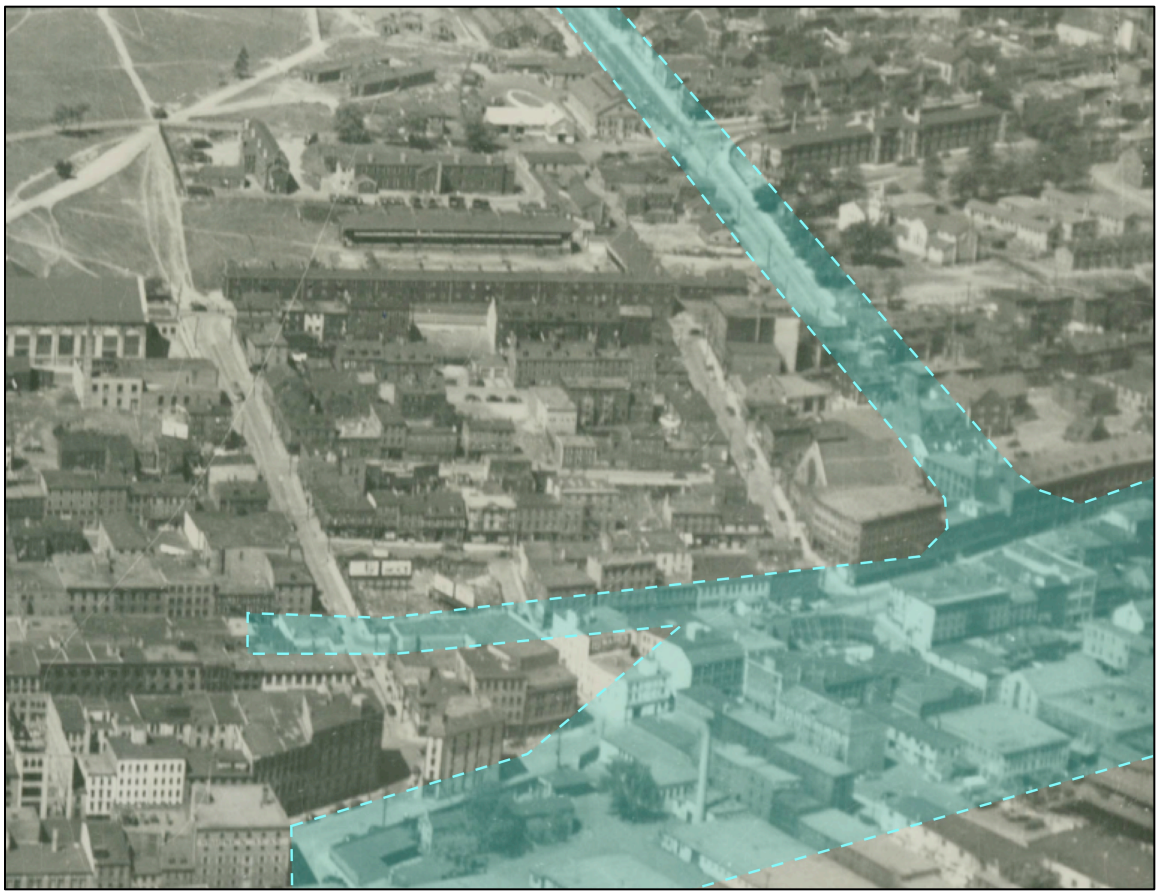
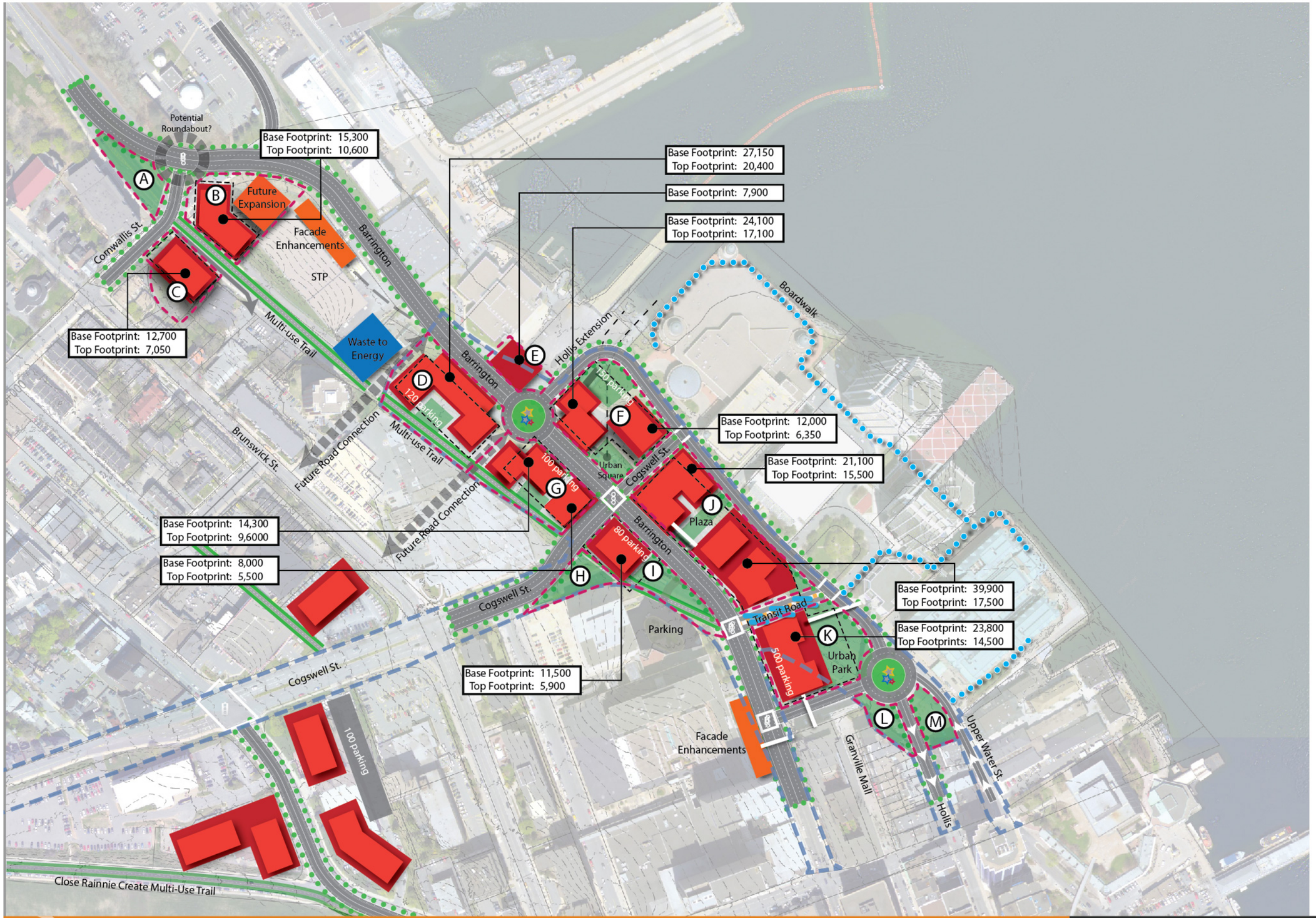


Figure 1. Detail of a c.1935 photograph showing the bustling business district prior to demolition for the Cogswell Interchange (approximated in light blue) and Scotia Square

Next Steps

Following the review of Design Brief #1 by the Steering Committee, feedback received will be integrated into the more detailed development of a preferred concept plan for the CogSwell Lands.



Plan Opportunities

1. Block scale compatible with Halifax block scale
2. Good resolution of Barrington, Brunswick, Hollis and Upper Water St traffic sharing/distribution
3. Good terminus to Granville Mall and connections to the waterfront boardwalk.
4. Old Barrington Street turned into multi-use trail means one street instead of two through narrow pinch points (STP area). This frees up more land for development and minimizes road lengths.
5. Dedicated transit road provides an at-grade solution for urban transit. Could be a hub point for a FRED or Birny Car route through downtown.
6. Good parking yield with 890 spaces per floor.
5. Waste to energy (heat recovery from STP and Harbour) plant could could provide district energy for the block.
7. Cogswell links to Barrington and Hollis easily.
8. Removing Barrington behind the STP significantly improves the entry sequence.
9. Better connections to Brunswick Street on Cornwallis (grade significantly reduced) helps to distribute traffic.
10. Future road connections preserved on Proctor and Hollis Street extension to link Brunswick. These roads would serve to reduce the Halifax Shopping Centre super-block scale.
11. The urban downtown experience is extended right to the STP.
12. Equal precedence for Barrington and Hollis Street entry and exit to downtown.
13. Upper Water Street is preserved as the Hollis Street extension.

Constraints

1. Roundabouts still 'feared' by public.
2. transit road is about 8% grade. Kind of steep.
3. Multi-use trail behind buildings will mean that the new buildings will have to have no 'back' to maximize security.
4. Pedway across urban park.
5. Urban park is surrounded by roads. Undergound roads not feasible. Overhead roads would shift the Cogswell exchange.
6. Cogswell terminates at the Casino. No harbour view corridors.

Parking Footprint
950 spaces per level

Parking Onstreet
350 spaces (Cogswell District Only)

Road Length
4-Lane = 1094 m.
2 Lane = 1026 m.

Signalized Intersections
3 on Barrington Street (one would be transit modified)

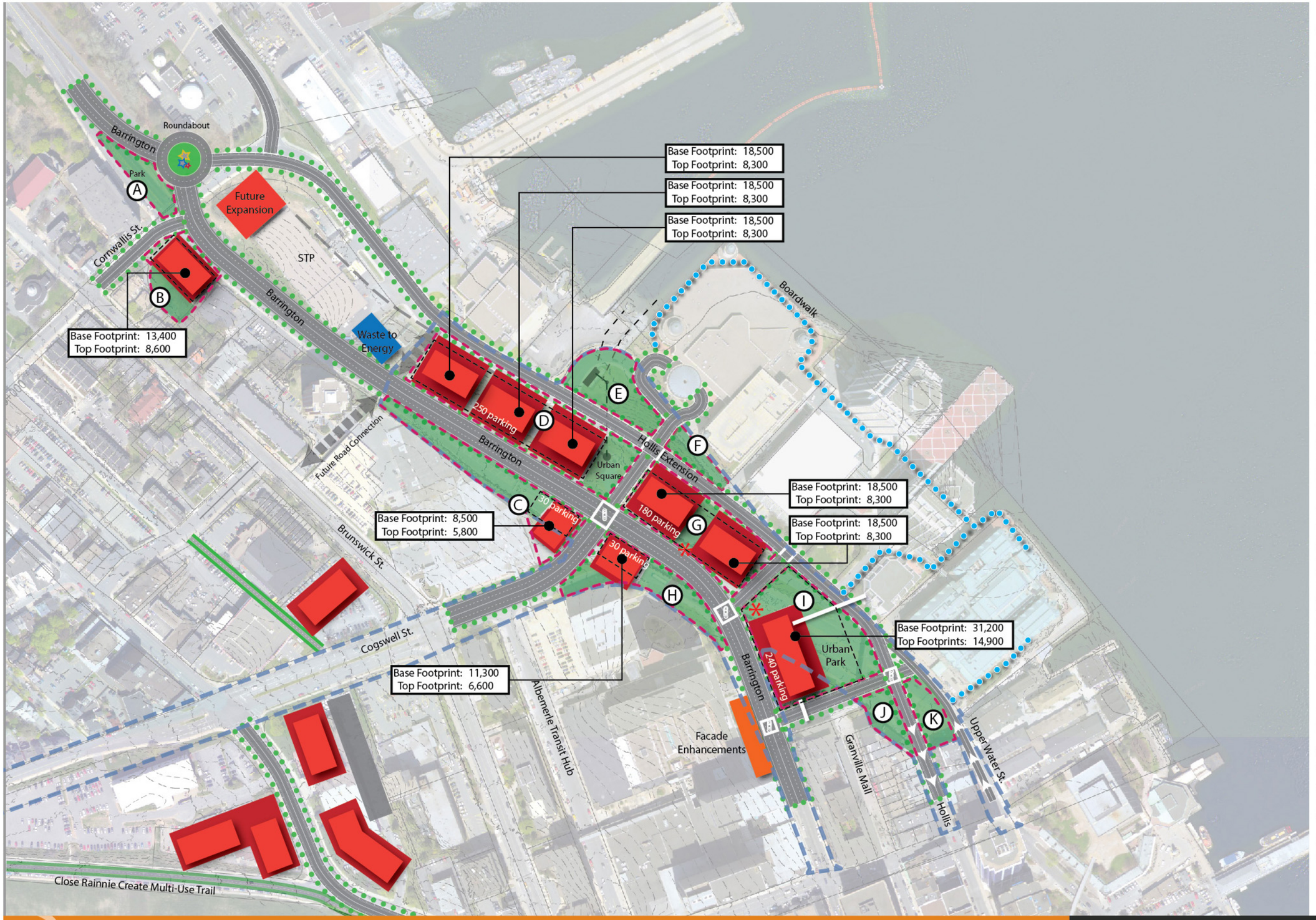
EKISTICS PLANNING & DESIGN

COGSWELL INTERCHANGE PLAN

CONCEPTUAL OPTION 1

Halifax, NS
client: HRM

scale. 1:3000
date. May 2013



Plan Opportunities

1. Block scale a little larger than typical Halifax block scale
2. Good resolution of Barrington, Hollis and Upper Water St traffic sharing/distribution
3. Good terminus to Granville Mall and connections to the waterfront boardwalk.
4. Moving transit to Albemerle as a transit hub frees up Barrington for facade enhancements, outdoor cafe's etc.
5. Dedicated transit road provides an at-grade solution for urban transit. Could be a hub point for a FRED or Birny Car route through downtown.
6. Moderate parking yield with 780 spaces per floor.
5. Waste to energy (heat recovery from STP and Harbour) plant could could provide district energy for the block.
7. Cogswell links to Barrington and Hollis easily.
8. Better connections to Brunswick Street on Cornwallis (grade significantly reduced) helps to distribute traffic.
10. Future road connections preserved on Proctor and Barrington/Hollis Street extension to link Brunswick. These roads would serve to reduce the Halifax Shopping Centre super-block scale.
11. Equal precedence for Barrington and Hollis Street entry and exit to downtown.
12. Upper Water Street is preserved as the Hollis Street extension.
13. Only 1 roundabout.

Constraints

1. Roundabouts still 'feared' by public.
2. Cornwallis Street intersection may be too close to roundabout for stacking.
3. Barrington Street and Lower Water pinch point through the STP lands is still not a great entry progression. Two roads through this tight strip of land may not be the best use of land.
4. Barrington St. from STP to Cogswell is single loaded. Still looking at Trademart building.
5. All bike trails are on-street only.
4. Pedway across urban park.
5. Urban park is surrounded by roads. Undergound roads not feasible. Overhead roads would shift the Cogswell exchange.
6. Cogswell terminates at the Casino. No harbour view corridors.
7. Only 3 block redevelopments compared to 5 in Option 1.
8. Long stretch of Barrington Sytreet between STP and Proctor Street services no development blocks.

Parking Footprint
730 spaces per level

Parking Onstreet
400 spaces (Cogswell District Only)

Road Length
4-Lane = 1058 m.
2 Lane = 1342 m.

Signalized Intersections
3 on Barrington Street and one on Lower Water/Hollis.

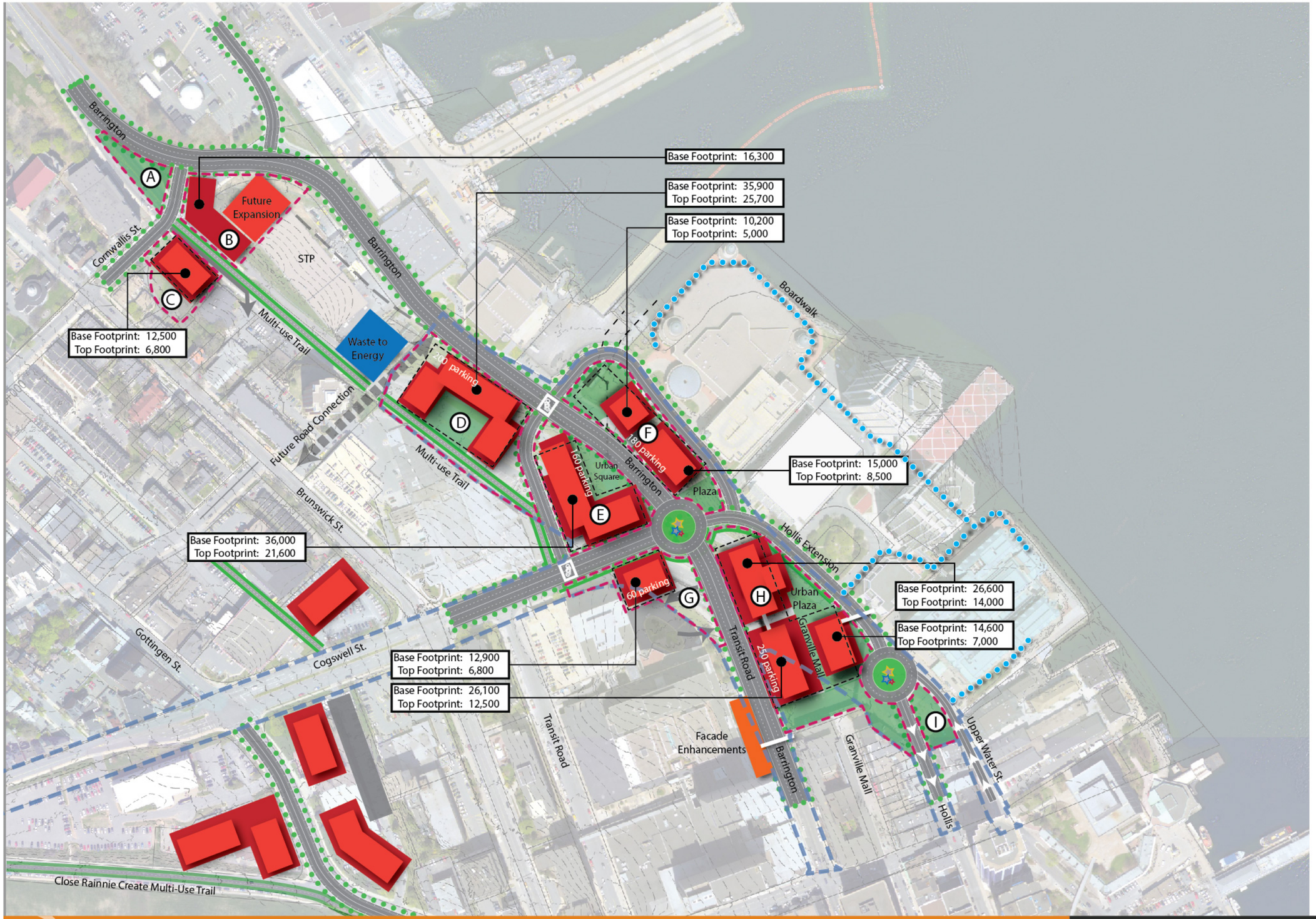
EKISTICS PLANNING & DESIGN

COGSWELL INTERCHANGE PLAN

CONCEPTUAL OPTION 2

Halifax, NS
client: HRM

scale. 1:3000
date. May 2013



Plan Opportunities

1. Block scale compatible with Halifax block scale
2. Good resolution of Barrington, Brunswick, Hollis, Cogswell, and Upper Water St traffic sharing/distribution
3. Granville Mall extended and terminates at Parking Garage and Purdy's Wharf.
4. Old Barrington Street turned into multi-use trail means one street instead of two through narrow pinch points (STP area). This frees up more land for development and minimizes road lengths.
5. Dedicated transit road on Barrington provides an at-grade solution for urban transit. Could be a hub point for a FRED or Birny Car route through downtown.
6. Good parking yield with 850 spaces per floor.
5. Waste to energy (heat recovery from STP and Harbour) plant could could provide district energy for the block.
7. Cogswell links to Barrington and Hollis easily.
8. Removing Barrington behind the STP significantly improves the entry sequence.
9. Better connections to Brunswick Street on Cornwallis (grade significanty reduced) helps to distribute traffic.
10. Future road connections preserved on Proctor and Hollis Street extension to link Brunswick. This road would serve to reduce the Halifax Shopping Centre super-block scale.
11. The urban downtown experience is extended right to the STP.
12. Equal precedence for Barrington and Hollis Street entry and exit to downtown.
13. Upper Water Street is preserved as the Hollis Street extension.
12. Only 2 signalized intersections.

Constraints

1. Roundabouts still 'feared' by public.
2. Road configuration is more 'suburban than urban'.
3. Multi-use trail behind buildings will mean that the new buildings will have to have no 'back' to maximize security.
4. Pedway across urban park.
5. Urban park is surrounded by roads. This option has the smallest urban park in favour of extending Granville Mall.
6. Cogswell terminates at the parking garage.
7. only 4 large development blocks compared to 5 in option 1 and 3 in option 2.
8. Connection to Brunswick Street is not great (improved but not great).

Parking Footprint
850 spaces per level

Parking Onstreet
330 spaces (Cogswell District Only)

Road Length
4-Lane = 1089 m.
2 Lane = 961 m.

Signalized Intersections
1 on Barrington Street and one on Cogswell.

EKISTICS PLANNING & DESIGN

COGSWELL INTERCHANGE PLAN

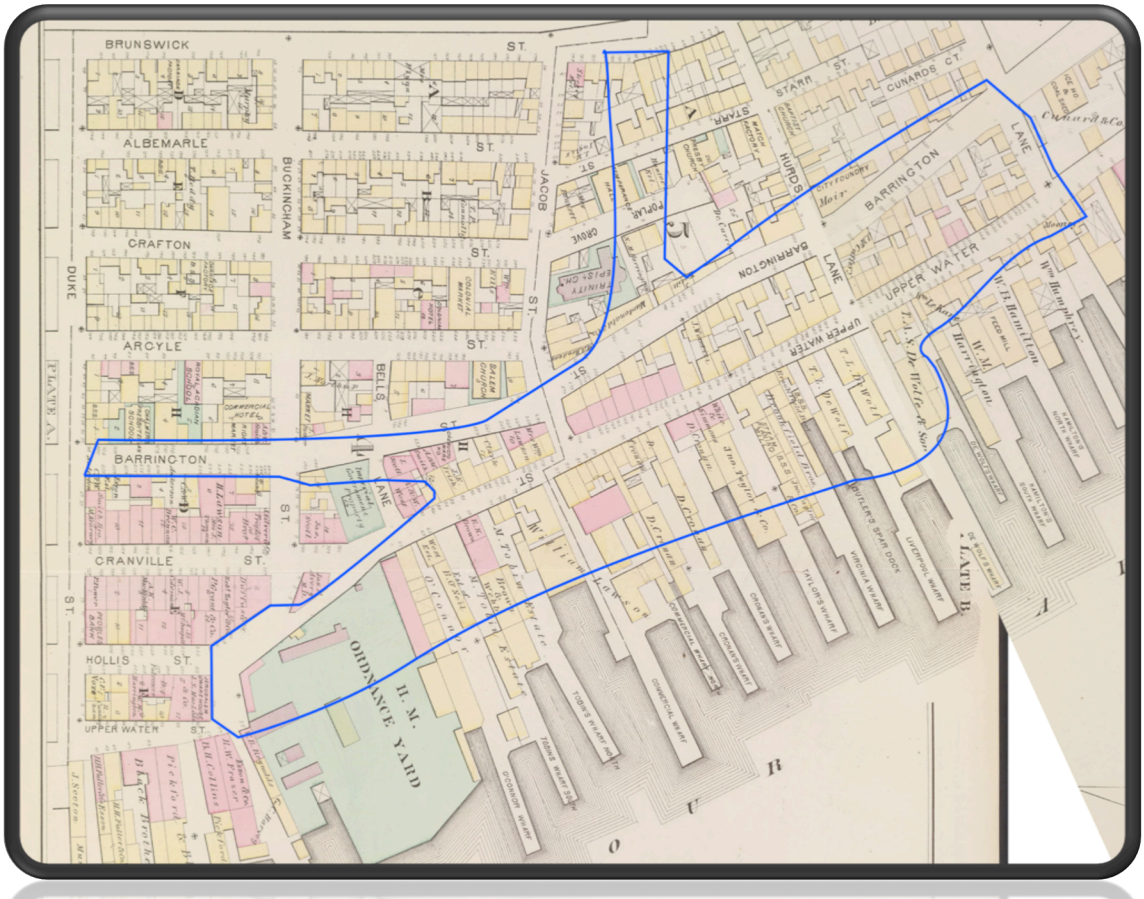
CONCEPTUAL OPTION 3

Halifax, NS
client: HRM

scale. 1:3000
date. May 2013

Appendices

COGSWELL INTERCHANGE LANDS PLAN: ARCHAEOLOGICAL RESOURCE IMPACT ASSESSMENT



Heritage Research Permit A2013NS010

April 2013

DAVIS MACINTYRE & ASSOCIATES LIMITED
109 John Stewart Drive, Dartmouth, NS B2W 4J7

COGSWELL INTERCHANGE LANDS PLAN:
ARCHAEOLOGICAL RESOURCE IMPACT ASSESSMENT

Heritage Research Permit A2013NS010
Category C

Davis MacIntyre & Associates Limited
Project No.: 13-005.1EKP

Principal Investigator: Laura de Boer
Report Compiled by: Laura de Boer, Courtney Glen & Stephen A. Davis

Submitted to:

Ekistics Planning & Design
1 Starr Lane
Dartmouth, NS B2Y 4V7

-and-

Coordinator, Special Places
Communities, Culture and Heritage
1747 Summer Street
Halifax, NS B3H 3A6

Cover: The outline of the modern Cogswell Interchange overlaid on Hopkins' 1878 plan of the city.

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EXECUTIVE SUMMARY

Davis MacIntyre & Associates was contracted by Ekistics Planning and Design on behalf of the Halifax Regional Municipality as part of a project to examine technical solutions for the possible demolition and redevelopment of the Cogswell Interchange and its associated lands in downtown Halifax. The archaeological component of this project includes mapping and a summary of potentially significant archaeological areas and features within the study area.

Records preserved in the HRM and provincial archives do not make it clear where the material from the 150 demolished buildings was taken. It is not clear whether the material from the most buildings was simply pushed over and used as fill, or whether it was hauled to a dump at no additional expense. In the absence of recorded hauling and dumping fees, the complete removal of this material may be the less likely scenario.

Quality topographic data of the pre-development interchange area could not be found in the course of this study. It appears that that the low underpass adjacent to Morse's Teas and Hollis Street was dug or blasted into the hill, while many other areas were built up.

The original city wall in this area was a very short-lived wooden structure that most likely ran down Citadel Hill just south of the modern Cogswell Street. It is possible, but not likely, that structural evidence of the wall and forts has survived in proximity to the Interchange.

Two layout scenarios are currently being considered in relation to the Interchange redevelopment: a "fine-grained approach" and a "bookend to the downtown" approach. Archaeologically, both scenarios represent equal risk to potential archaeological deposits within the study area as either scenario will result in ground disturbance that will encroach upon land of high archaeological potential., which is predicted to be found in pockets throughout the Interchange lands.

It is expected that archaeological resources within the impact area will fall into three categories: commercial, residential, and military. The scale of the Interchange and the likelihood of pockets of undisturbed or partially disturbed archaeological material scattered throughout the impact area means that an archaeological testing strategy would prove extremely impractical. Instead, it is recommended that when Interchange demolition is pending, archaeological monitoring protocols be established for all phases of work involving significant ground disturbance.

1.0 INTRODUCTION

In January 2013 Davis MacIntyre & Associates was contracted by Ekistics Planning and Design on behalf of the Halifax Regional Municipality as part of a project to examine technical solutions for the possible demolition and redevelopment of the Cogswell Interchange and its associated lands in downtown Halifax. The archaeological component of this project includes mapping and a summary of potentially significant archaeological areas and features within the study area.

This assessment was conducted under Category C (Archaeological Resource Impact Assessment) Heritage Research Permit A2013NS010 issued by the Department of Communities, Culture and Heritage. This report conforms to the standards required by the Heritage Division under the Special Places Protection Act (*R.S., c. 438, s. 1*).

2.0 STUDY AREA

The Cogswell Interchange forms a border between Halifax's downtown core and the North End. The Interchange encompasses parts of Upper Water Street, Barrington Street, Cogswell Street, as well as intersections with Hollis Street, Brunswick Street, Gottingen Street, and Albemarle Street (Figure 2.0-1). A product of an incomplete urban renewal plan initiated in the late 1960s, the Interchange would have originally formed part of a major thoroughfare known as Harbour Drive, which would have run along the shore of downtown Halifax to Point Pleasant Park before crossing a bridge over the Northwest Arm to the mainland. Citizen protest, particularly in relation to the historic downtown buildings that would later become Historic Properties, called a halt to the rest of the development shortly after the Interchange and the neighbouring Scotia Square were completed. The resulting infrastructure is widely regarded as exceeding the city's needs and creating a physical and social barrier between the downtown and the North End.

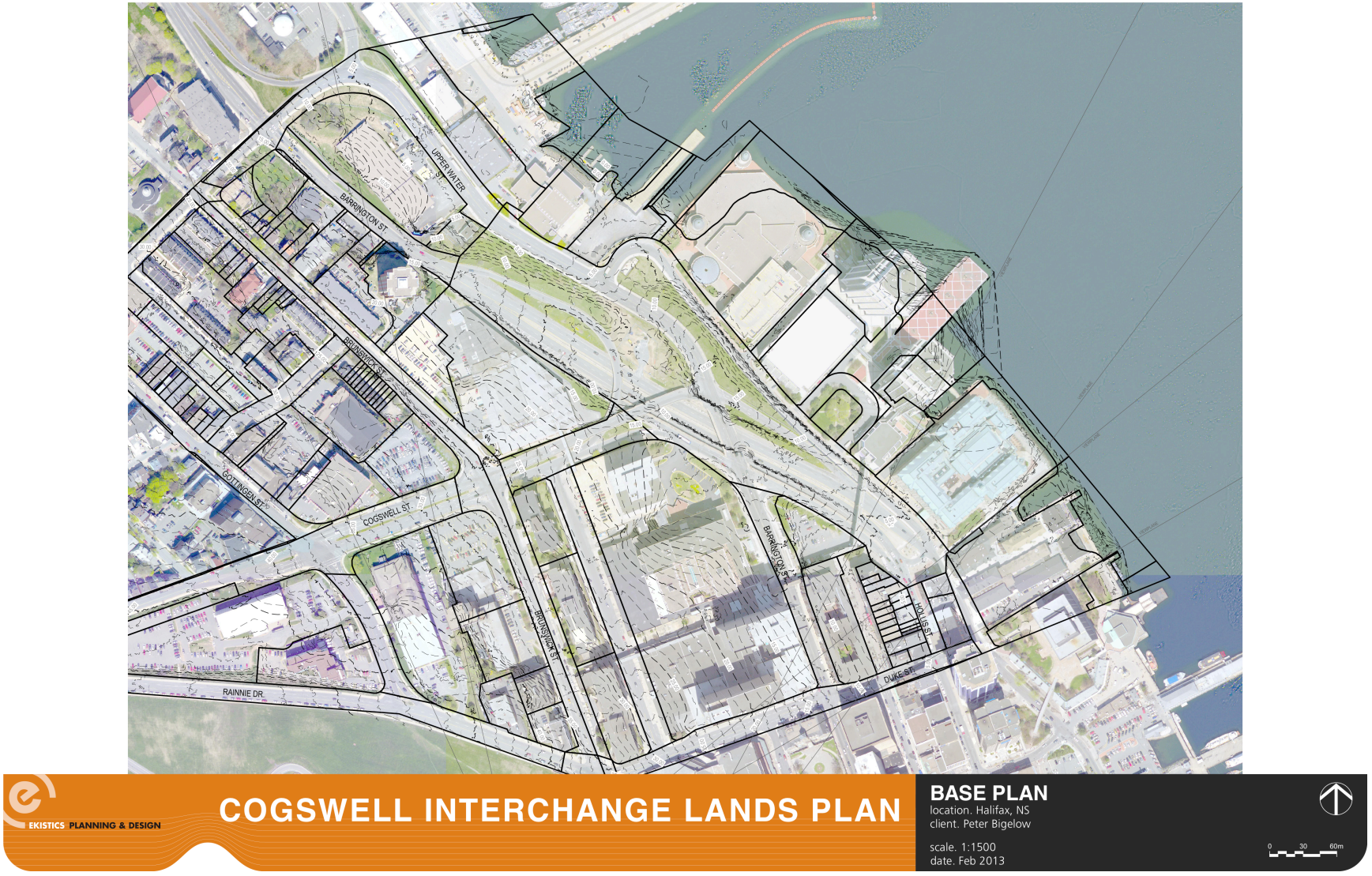

Figure 2.0-1: A base map showing the Cogswell Interchange and it surrounds, courtesy Ekistics Planning & Design.

3.0 METHODOLOGY

A historic background study was conducted by Davis MacIntyre & Associates Limited in the spring of 2013. Historical maps and manuscripts and published literature were consulted at Nova Scotia Archives and the HRM Archives in Halifax. The Maritime Archaeological Resource Inventory, held at the Department of Communities, Culture and Heritage, was searched to understand prior archaeological research and known archaeological resources neighboring the study area.

3.1 Maritime Archaeological Resource Inventory

Peninsular Halifax encompasses approximately 70 known archaeological sites as of 2013. Of these, there are six historic sites recorded in close proximity to the Cogswell Interchange.

The Sellon Site (BdCv-07) represents the remains of an eighteenth century home in historic Dutchtown, at the corner of Barrington and Cornwallis Streets.

The Halifax STP (Sewage Treatment Plant) site (BdCv-35) is a broad swath of mixed Euro-Canadian archaeological material relating to activity in historic Halifax from 1749 onwards. It is bounded by Barrington, Cornwallis, and Upper Water Streets, and was registered as a single but complex site during pre-development archaeological investigations in 2002.

The Upper Water Street CSO Site (BdCv-38), at the intersection of Upper Water and Barrington Streets, as well as the North of Cornwallis Street Site (BdC-39) between Barrington and Upper Water both represent stone foundations relating to historic commercial and residential activity. The Upper Water Street CSO Site is also tidally influenced, a reminder that it rests along the original shoreline of Halifax Harbour.

A wooden drain associated with mid- to late eighteenth century artifacts, as well as wharf cribwork and stone foundations, were encountered during construction activity at the foot of Duke Street (BdCv-55).

Finally, the Waterside Centre site (BdCv-67), bounded by Hollis, Water, and Duke Streets and by the Morse's Teas Building, also represents mixed commercial and residential activity from Halifax's first 200 years. Timber piles, brick and concrete pillars, and artifactual material was observed in the early phases of the 2012 construction of the Waterside Centre.

3.2 Historical Background

The history of human occupation in Nova Scotia has been traced back approximately 11,000 years ago, to the Palaeo-Indian period or *Sa'qewe'k L'nu'k* (11,000 – 9,000 years BP). First Nations settlement on the Halifax peninsula appears to have been somewhat limited, particularly on the rocky and sloped shore that makes up much of the downtown core. This was most likely due to the lack of suitable encampment sites and a relative scarcity of freshwater streams, brooks, or rivers. The most notable period of human settlement in proximity to the Cogwell Interchange study area began in 1749, with the founding of the fortified town of Halifax. The original town makes up much of the downtown core, from Salter Street in the south to Joseph Street (now Scotia Square) in the north and from just below the Citadel in the west to Water Street (the original harbour beach) in the east.

By the middle of October 1749, shortly after the arrival of Halifax's earliest European settlers, a rough barricade had been erected around the small town. The temporary boundary consisted of "felled trees, logs and birchwood," and was not the defensible palisade originally planned for the settlement. It was not until the following summer that a true town palisade was erected. On its northern side, the palisade was punctuated by two of the five small forts built into the wall. The northwestern was Fort Luttrell, at the site of what would become the Glacis Barracks in the nineteenth century. A smaller, unnamed defense point was found near what would be the intersection of Jacob and Cogswell Streets. The final fortification on the northern wall was Grenardier Fort, near the future corner of Jacob Street and Poplar Grove. The town's North Gate was immediately east of this fort, and the remainder of the palisade ran along the future Jacob Street to the water's edge.[1]

Each fort was assembled in a double layer of 10' long, 6" pickets in the distinctive shape of a square with a bastion at each corner. On average, each of the five forts were a total of 193 feet from tip to tip along each side, with the sides of the square measuring 125 feet and the curtains 75 feet. A barrack for two companies or 100 men was found within each fort. The forest was cleared some 30 feet past the palisade to provide no cover for potential attackers. [2]

In these earliest years, settlement beyond the palisade was limited, accessed by the beach-side road that would become Water Street. Barrington Street did not extend beyond the palisade, and what is now Brunswick and Gottingen Streets were simple country tracks connecting a scattering of cabins built of upright logs and planks. Lockman Street, which would become the northern extension of Barrington Street in later years, was also taking shape here.[3]

[1] Piers 1947:1-3.
[2] Piers 1947:3-4.
[3] Erickson 2004:ix and Raddall 1993:37.

Along these rough laneways, a wave of German, Swiss, and French settlers or "foreign Protestants" soon established themselves, resulting in the community north of the town palisade being named "Dutch Town" for the *Deutche* (German) settlers. Dutch Town was defended not by the palisade walls but by additional blockhouses constructed closer to the peninsula's isthmus and near the modern location of the Fairview Cemetery.[4] In 1753, however, many of the German settlers had been relocated to the new settlement at Lunenburg in an effort to continue expansion of European (specifically non-French) settlement in Acadia.[5]

A 1755 map of the town and its fortifications shows that the study area lay in proximity to a series of houses or other buildings along the shore as well as Grenadier Fort, the northern farm lots, and "Ives' Wharf," apparently one of the first wharf or dock structures serving the settlement (Figure 3.2-1).

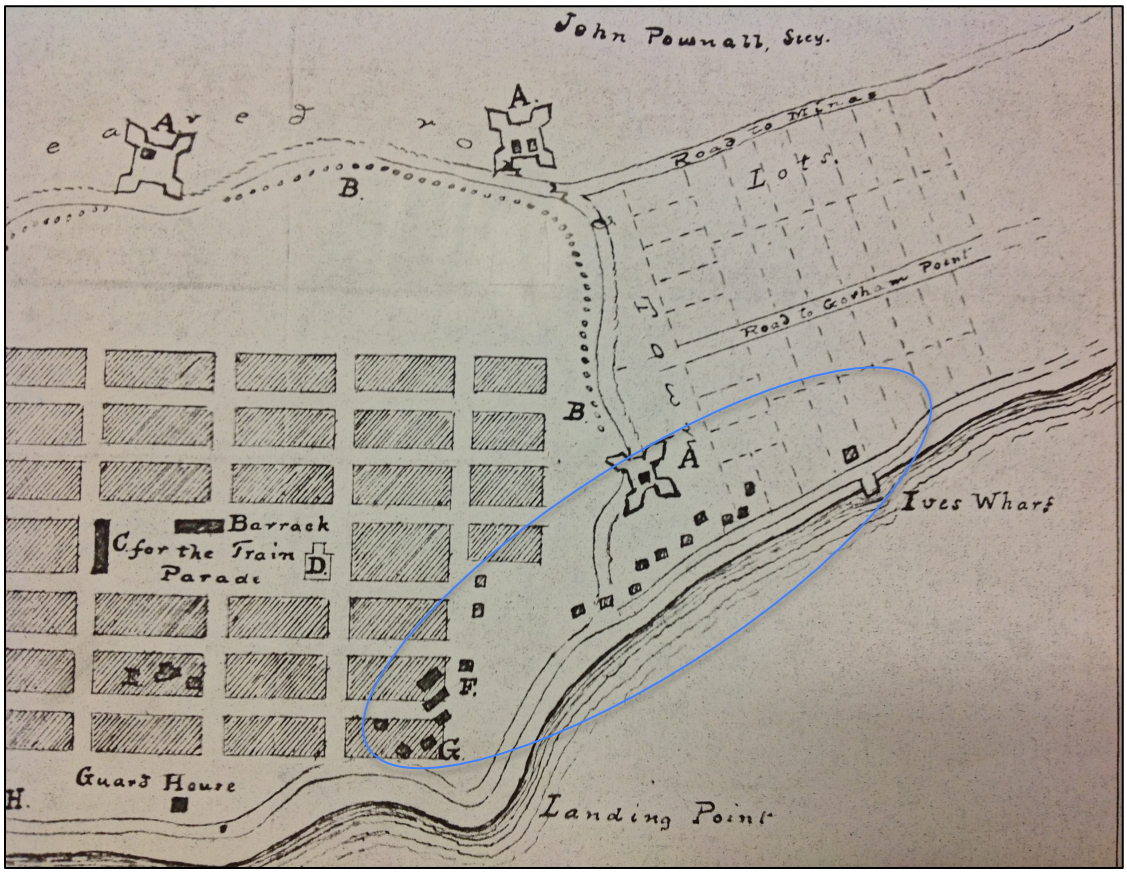

Figure 3.2-1: Detail of a 1755 plan of the town of Halifax, showing the palisade, three of the perimeter forts, and a rough road connecting them.[6] Note the cluster of houses along what would become Upper Water Street, as well as "Ives Wharf" and the numerous farm lots beyond the palisade wall. The approximate Interchange area is shown in blue.

[4] Raddall 1993:37.
[5] Raddall 1993:39.
[6] Mitchell 1755.

The year 1759 saw the construction of two large wooden blocks of barracks near what is now the corner of Cogswell and Brunswick (then Barrack) streets, just below where Fort Luttrell stood at the time. The buildings were soon known as the Red Barracks, accommodating 1,000 men, and featured a parade ground between them. They were situated on what would become the site of Trinity Church, slightly downhill from one of the previous wood and earth fortifications, [7] presumably Fort Luttrell.

By 1762 the palisade was obsolete, and the town was described by one historian as "prosperous and growing beyond the rickety old palisades like a lusty wench bursting out of an old tight bodice." [8] In April of this year Major-General Bastide, who had been overseeing Halifax's fortifications, ordered "a great road from the shore up the Hill at the north end of the town" to be built. The road is speculated to have run on a zigzag course just inside the old palisade wall, near where Jacob Street would later lie.[9]

By 1766, a military ordnance yard was well-established at the foot of Buckingham Street (Figure 3.2-2). By this time it included two batteries, which were likely just beyond the Cogswell Interchange impact area, along with two storehouses, an armourer's shop, and a laboratory, all of which may have been partially or fully beneath the footprint of the interchange.

[7] Raddall 1993:59.
[8] Raddall 1993:63.
[9] Piers 1947:11.

Figure 3.2-2: The Ordnance Yard in 1766.[10] Overlays suggest that the southern termination of the modern interchange on Water Street runs over the grey-shaded buildings – the Long Store, the Square Store, the Armourer's Shop, and the Laboratory.

Much of the main body of the Cogswell Interchange was Halifax's bustling waterfront warehouse district. Overlays indicate that a great deal of infilling between the founding of the city and the Interchange construction in the late 1960s has moved the shoreline much farther into the harbour. A twentieth century reconstruction of Halifax's significant buildings and activities between 1749 and 1830 (Figure 3.2-3) shows wharves and warehouses, a "British Coffee House" in 1786, a "Serious fire at Creighton & Grassies' wharf, Dec. 17, 1816," and two wells along Upper Water Street. Grenadier Fort appears to lie at the very edge of the Interchange footprint, along with the site of Trinity Church.

[10] Marr 1766.

Figure 3.2-3: A map drawn in the twentieth century reconstructs significant elements of Halifax between 1749 and 1830.[11] The approximate Interchange area is shown in light blue.

The mid-nineteenth century saw the town's gradual growth into a city, soon to be known as "Warden of the North" for its key role as a military port during a series of conflicts ranging from the American Revolutionary War up into the twentieth century and the Second World War. The waterfront continued to bustle with activity relating to both military and merchant interests, with the Ordnance Yard continuing operation throughout this period (Figures 3.2-4 through 3.2-7) and many long-lived business wharves and warehouses remaining static across several decades' worth of downtown and waterfront maps. Ironstone construction was very common, ensuring longevity many waterfront buildings into the twentieth century.

[11] NSA 1830.

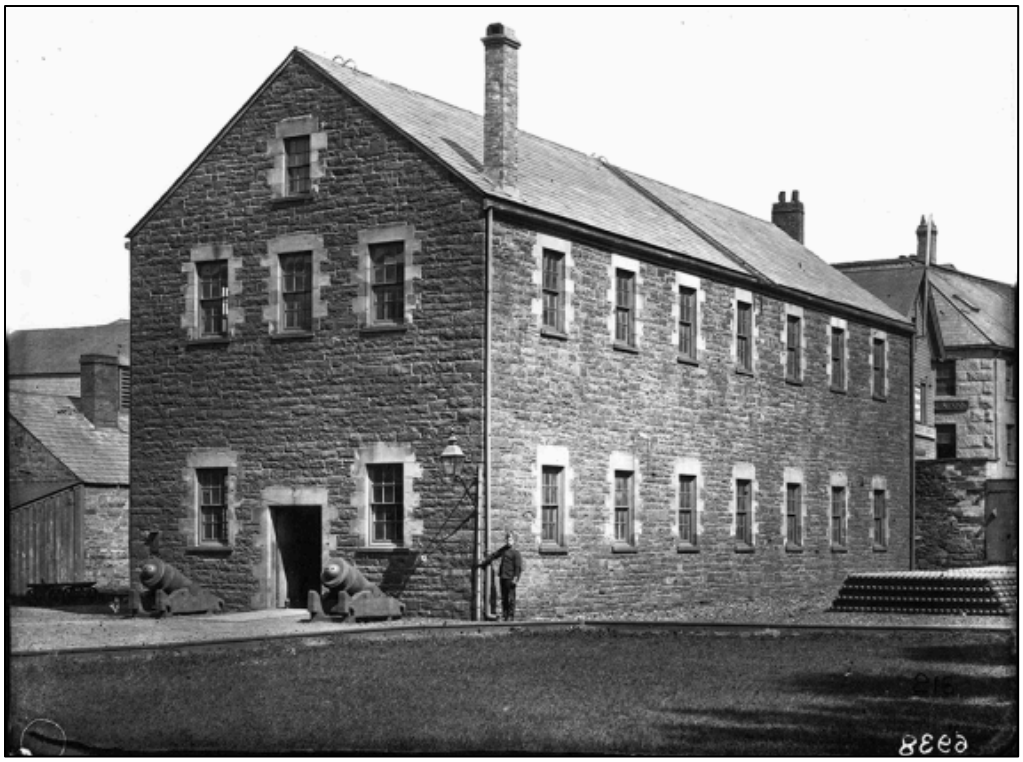

Figure 3.2-4: An Ordnance Yard building around 1879, most likely one of the stone structures projected to be within the footprint of the interchange.[12]

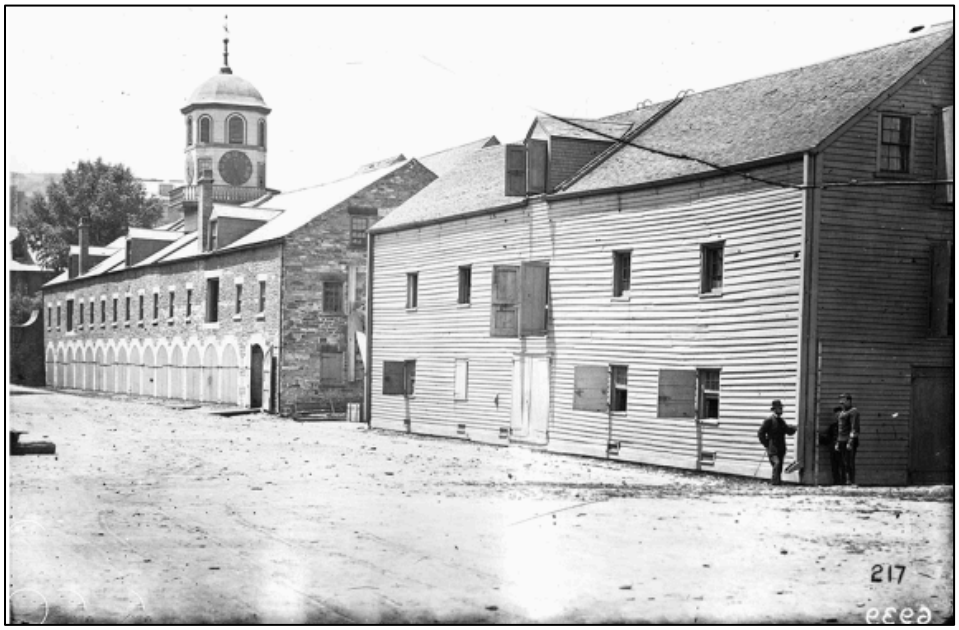

Figure 3.2-5: Two Ordnance Yard storage buildings c.1879.[13] Overlays indicate that the stone building with a clock tower to the left or west lies completely under the footprint of the interchange, while the nearer wooden building is likely below a modern office building near the Purdy's Wharf complex.

[12] Royal Engineers Collection c.1879a.

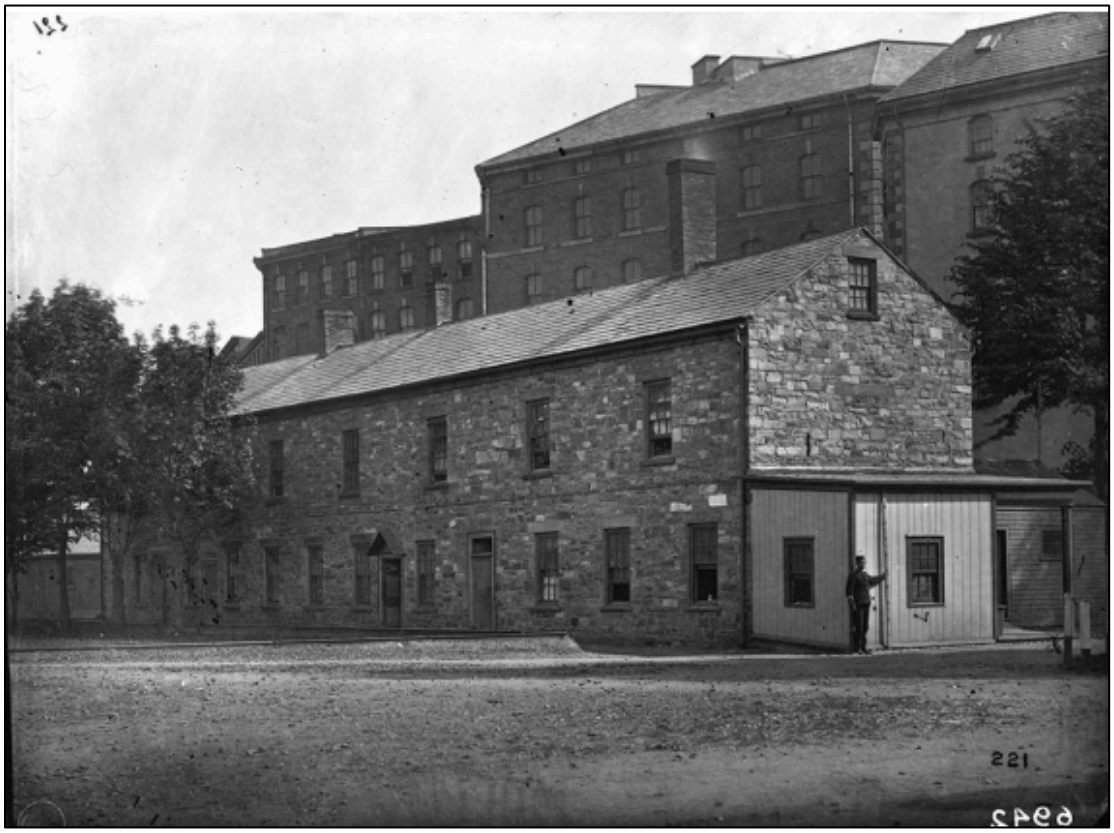

Figure 3.2-6: The Ordnance Yard office building (ironstone trimmed with sandstone) near the southwest wall of the Ordnance Yard, c.1879.[14] Visible behind the office is the Pentagon Building and the Duffus & Co. Building, both of which stood just outside the Interchange impact area.

[13] Royal Engineers Collection c.1879b.
[14] Royal Engineers Collection c.1879c.

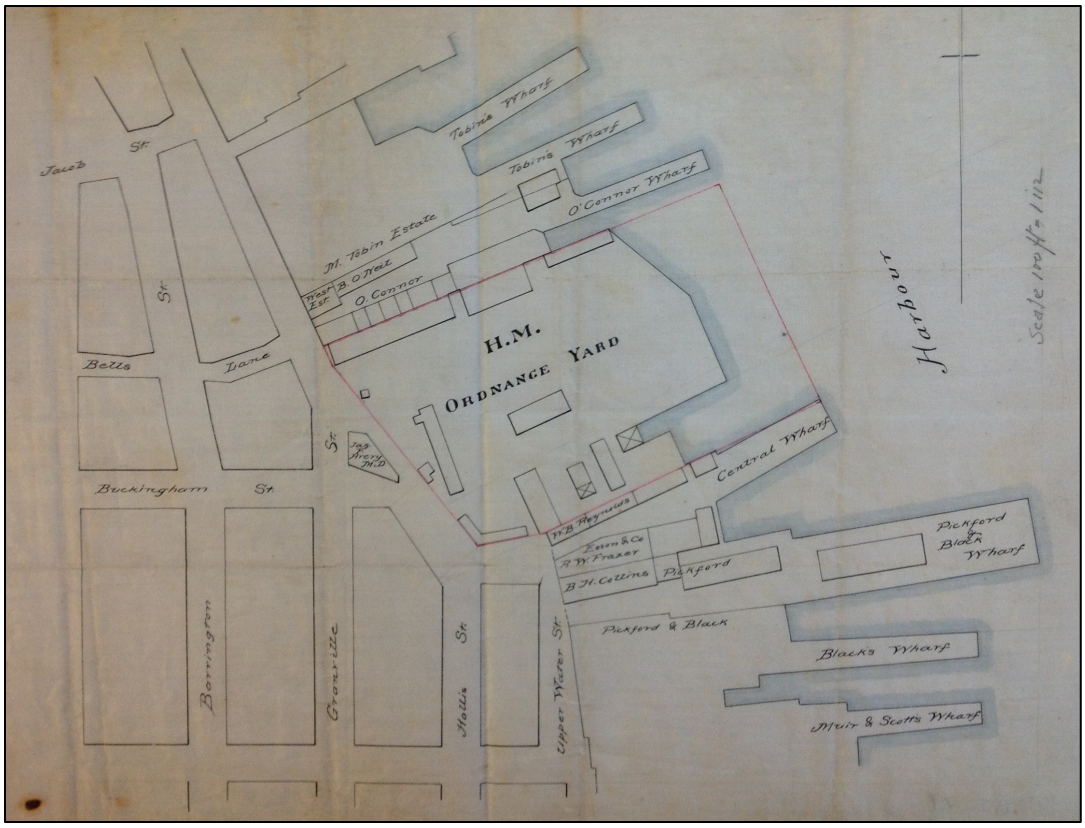

Figure 3.2-7: A plan showing the Ordnance Yard and its surrounds in 1890.[15]

Dutchtown, meanwhile, was flourishing. Having gradually shifted from a farming to a residential district, by the Victorian period it was reportedly "THE" place to live, with many beautiful homes and a varied mixture of economic classes.[16] Closer to the downtown core, a variety of businesses lined Joseph Street, Upper Water Street, Barrington Street, and Bell's Lane. Compiled in 1878, Hopkins' Atlas of the City of Halifax provides a very clear sense of the streets and buildings encompassed by the Interchange (Figure 3.2-8).

An oblique aerial photograph from circa 1935 shows the wide variety of buildings encompassed by the footprint of the Cogswell Interchange (Figure 3.2-9). While ironstone buildings erected in the 1800s continued to stand solidly, more modern buildings sprang up between them. Some shops, like that of John Hutton at the corner of Joseph Street and Barrington (Figure 3.2-10), were classic late Victorian buildings of wood, sometimes with brick or cast iron façades.

[15] HRM Archives 1890.
[16] PANS 1972.

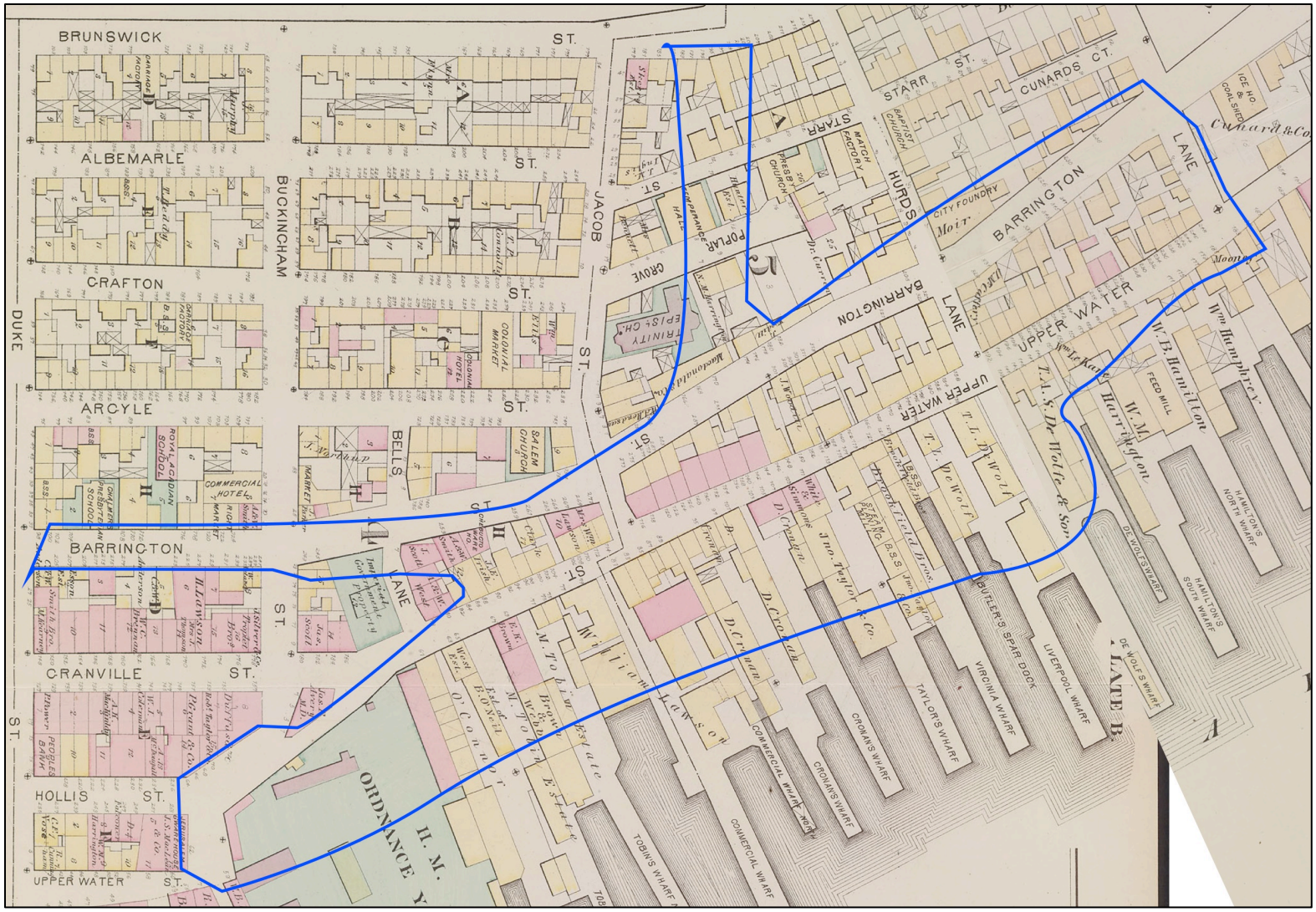

Figure 3.2-8: Hopkins' 1878 Atlas, Places A and C, showing the approximate outline of the Cogswell Interchange.

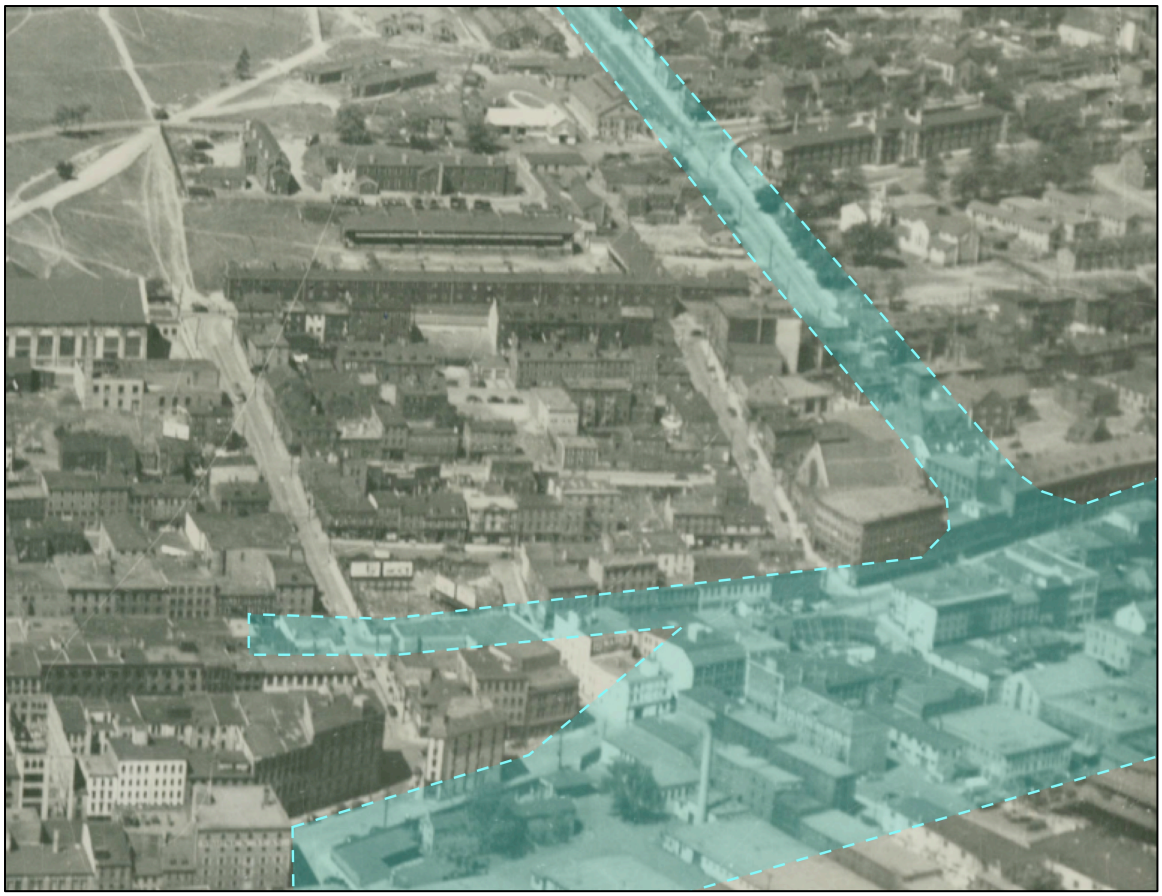

Figure 3.2-9: Detail of a c.1935 photograph showing the bustling business district prior to demolition for the Cogswell Interchange (approximated in light blue) and Scotia Square.[17]

[17] Nova Scotia Bureau of Information c.1935.

Figure 3.2-10: The shop of John Hutton, wholesale tobacconist, at 633 Barrington Street (corner of Jacob Street) in 1945.[18]

By the 1960s, growth and ease of movement in the downtown had become limited by the street system established over 200 years beforehand. In an effort to create a free flow of traffic around the peninsula, the Cogswell Interchange was planned as the first phase of the larger Harbour Drive system, and a broad swath of commercial and residential land was expropriated for the construction. The anticipated schedule would see the Interchange opened to traffic when the first phase of the neighbouring Scotia Square development opened for business. Archival records show that the following properties were expropriated or assessed in relation to the Interchange in 1968:

-Hilda Watson, Barrington Street
-Vacant Land, suggesting archaeological preservation of an older phase of Halifax occupation:
    -Estates of Bridget Ead and John Ead, Proctor Street and Upper Water Street
    -Estate of John Stanley, Proctor Street
    -Estate of Patrick Power, Upper Water Street
    -William Collings and Sons Limited, Barrington Street and Upper Water Street
-Karlson Shipping Company Limited, Upper Water Street
-Grimsby Group of Canada Limited, Upper Water Street
-Mahar's Transfer Express Limited, Upper Water Street
-Atlantic Spring and Machine Company Limited, Upper Water Street
-Howard A. and Audrey Salter, Barrington Street

[18] Estate of Ralph W. Kane 1945.

-William Collings and Sons Limited, Barrington Street
-Estate of John James Brown, Upper Water Street
-Salvation Army, Barrington Street
-Mary E. Morgan, Upper Water Street
-Louis Newman, Barrinton Street
-William Moir, Barrington Street
-John E. Ahern, Upper Water Street
-Halifax Labor Temple Association, Cogswell Street
-Imperial Oil Company Limited Civic Wharf, Upper Water Street
-James Simmonds and Company Limited, Upper Water Street
-Pickford and Black Limited, Upper Water Street
-Nova Scotia Shippers Limited, Upper Water Street
-Donald C. Keddy Limited, Upper Water Street
-Sullivan Storage Company Limited, Upper Water Street
-Joseph Simon, Upper Water Street[19]

Cunard's Coal Sheds were demolished at a cost of $4,000, while special redesigns were enacted to preserve the Purdy Brothers and Karlsen Shipping buildings on the waterfront. An expenditure of $14,677.72 is listed for stone fill to replace the excavated timber piles and cribwork under "Wall No. 1 Footing," suggesting the old infilled wharves along at least part of the old Upper Water Street have been eliminated. Cobblestones were removed from Bell Lane "for historic preservation," though it is not yet clear where the cobbles were taken. [20]

A cost of $1,300 is listed for "Removal of building foundation footings and old walls." This relatively small sum suggests that it was only applied to a small portion of the buildings impacted by the interchange. [21]

The James Simmonds and Pickford and Black properties were completely demolished at this time, but the Joseph Simon and Collins Bank buildings were spared the wrecking ball by being partially dismantled, with approximately 10-12 feet of the structures being disassembled, the masonry (granite blocks and ironstone, respectively) numbered for re-assembly, and the open ends of the buildings re-sealed with wood. [22]

The HRM archives collections include a great deal of photographic material related to this construction period, which was very much in the public eye at the time. In particular, two photos taken less than three months apart show the sweeping changes to the downtown at this time (Figures 3-11 and 3-12). More photographs show buildings that were partially or completely removed during the development (Figures 3-13 through 3-23).

[19] HRM Archives 1968.
[20] HRM Archives 1968.
[21] HRM Archives 1968.
[22] HRM Archives 1968.

Figure 3.2-11: Barrington Street as viewed from the Trade Mart in March 1968, after demolitions for Scotia Square (foreground) but prior to expropriation and demolition for the Interchange (standing buildings from the left up to Morse's Teas on the right).[23]

Figure 3.2-12: A second photo from approximately the same location in the Trade Mart, nearly three months later (late May 1968).[24]

[23] Police Museum 1968a.
[24] Police Museum 1968b.

Figure 3.2-13: An ironstone and granite building complex belonging to Joseph Simon and shared with Donald C. Keddy, looking northeast.[25] Documentation indicated that only 10-12 feet of this building was within the Cogwell Interchange foorprint, and that it was partially dismantled.

Figure 3.2-14: Another view of Joseph Simon's "Scrap Iron Metals and Marine Stores" building, looking east.[26]

[25] Police Museum 1967a.
[26] Police Museum 1967b.

Figure 3.2-15: William Collings and Sons, formerly a military barracks and later a saloon before its final pre-demolition incarnation as a machine works.[27] Located on Upper Water Street, probably in proximity to the old Ordnance Yard.

Figure 3.2-16: A photograph bearing the label "Mahar's Transfer Ltd." suggests this old wooden building was part of the Mahar's business that was expropriated for the interchange.[28]

[27] Police Museum 1968c.
[28] Police Museum 1967c.

Figure 3.2-17: A more modern component of Mahar's Transfer Ltd.[29]

Figure 3.2-18: The west side of Upper Water Street between Bell Lane and Jacob Street in March 1968, showing the John Howard and Leckie buildings that would be completely demolished less than three months later.[30]

[29] HRM Archives n.d.
[30] Police Museum 1968d.

Figure 3.2-19: Another view of the Howard's building complex, this time looking northwest from the corner of Bell Lane and Upper Water Street.[31]

Figure 3.2-20: The S. Cunard Coal and Oil Building (left), demolished by May 1968.[32] *The two brick and stone buildings to the right remained standing at that time.*

[31] Police Museum 1968e.

Figure 3.2-21: James Simond's Ltd on Lower Water Street, showing an older ironstone and granite phase (left) as well as a much newer brick phase (right). [33] *The building was completely demolished during Interchange construction.*

Figure 3.2-22: Upper Water Street looking north east from the corner of Bell Lane.[34]

[32] Police Museum 1967d.
[33] Police Museum 1967e.

Figure 3.2-23: The section of Barrington Street northeast from Jacob Street appears to have contained fewer heritage buildings and more twentieth century structures like the Salvation Army Hostel.[35]

4.0 POTENTIAL RESOURCE INVENTORY

Detailed archival resources in the form of Hopkins' 1878 Atlas of the City of Halifax and Goad's Fire Insurance Plans allow for itemized lists of buildings and other resources in or near the Interchange footprint. Buildings standing in the late nineteenth century and afterwards are those most likely to have left notable remains in the archaeological record. Included in the listings below are known structures and businesses in 1878, 1895, 1914, and 1951. These intervals were selected as each shows a significant interval of structural change.

[34] Police Museum 1967f.
[35] Police Museum 1967g.

Hopkins Atlas, 1878:[36]

-City Foundry
-J. M. Caffery
-Moone
-Wm Humphrey
-W. B. Hamilton
-W. M. Harrington
-Wm Le Karie
-T.A. De Wolfe & Son
-T. L. De Wolfe
-Butler's Spar Dock
-B.S.S. Brookfield Bros.
- Steam Planing Mill
-B.S.S.
-Jno Taylor & Co.
-White and Simmons
-D. Cronan
-William Lawson
-M. Tobin Estate
-E. K. Brown
-Brown & Webb
-West Est.
-Est. of B.O'Neil
-O'Connor
-H.M. Ordinance Yard offices and storehouses
-W. B. Reynolds
-Jerusalem Warehouse, J. S. MacLean & Co.
-P. Grant & Co.
-Robt Taylor & Co.
-Duffus & Co.
-Jas Avery M.D.
-A & W West
-J. E. Irish
-J. Scott
-Imperial Government Property
-W. _dard
-H. Lawson
-C. & W. Anderson
-Esson Est.
-C. & W. Anderson
-Chalmers Presbyterian School
-Right Market
-A. & W. Smith
-J. Parker
-A. & W. Smith
-Chebucto Warehouse
-Clarke
-Mrs Wm. Lawson
-Macdonald & Co.
-Trinity EpisL Ch.
-N. M. Harrington
-Temperance Hall
-Hunter Est.
-J. Woodill
-Dr. Curran
-Cunard & Co.

[36] Hopkins 1878.

Fire Insurance Plan, 1895:

-Ordnance Yard offices, sentry post, storehouses and clock tower
-Ship Chandler Hall
-Can Express Co's Offs (Canada Express Company's Offices)
-MFG Jeweller
-Bahery Portable Steel Ovens
-Moving Pictures
-Butcher
-Balwin & Co. Grocery
-Who. Liquors
-Liq. (Liquor)
-Royal Bank of Canada
-Photographer
-Aberdeen Bldg. (Building)
-St. R'Y (?)
-Wentzell Ltd. Wholesale & Retail Grocers
-Wentzell's Gro. Whse (Warehouse)
-Customs' Whse
-Scotia Pure Milk Pasteurized Milk Fac. (Factory)
-Globe Hotel
-Shooting Gallery
-Leather Whse
-McDonald & Co Storage
-MacDonald & Co Brass Founders &Copper Sm's (Smiths) Fitting Shop
-B. Sm (Smith)
-Clayton & Sons Storage
-Boarding Hse (House)
-Bakery
-Paint Shop
-Hides
-Clayton & Sons Clothing Fac.
-Soda Water Fac.
-Furn'e (Furniture)
-Oaas.
-Marble Whs (warehouse)
-Chinese Laundry
-Hotel
-W & A Moir Machine Shop & Foundry off and sto (storage)
-W & A Moir smithy
-W & A Moir Machine Shop
-Paints & Wall Paper
-William Roche
-Coal Shed
-Commercial Cable Co. cable shed and whse
-T.A.S. de Wolf & Son Warehses
-Hay & Feed
-Gun Sm. (Smithy)
-W. H. Schwar & Son Coffee & Spice Mill
-Flour & Feed Whse.
-C. Robin Collis & Co
-Fish Whse
-Shingles
-Chinese Rest (Restaurant).
-Hay & Feed
-Brookfield's Wharf
-Brookfield Bros. Lumber Storage
-B'Sm (Blacksmith)
-Builder's Supplies Storage
-H. R. Silver Ltd. Gen^{L} Whse.
-Silver Wharf
-J. T. Wainwright & Co.
-H. R. Silver Ltd. Whses
-Fish Whse
-H.R. Silver Ltd. Molasses Whses.
-Fish Storage
-Coal Shed
-Coal Sheds
-Bonded Whse
-Paints
-Ship Chand. (Chandler)
-Copper Storage
-Excise Whse
-Furne Whse (Furness Warehouse)
-Furne
-Furness Line Off.
-Excise Whse

-The Martin Senour Co. L^{n} Who. Paints & Oil
-Corn Mill Storage
-Mach. (Machine) Shop
-Smithy
-Leather Hide Whse
-Harlan Fulton Hide Whse and Cooper Shop
-Wm. Mc Fatridge Marine Stores
-Block & Pump
-Ship Carp. (Carpenter)
-15 unnamed groceries, produce or provision shops.
-13 unnamed saloons
-13 unnamed general warehouses or storage
-9 unnamed offices
-8 unnamed restaurants
-5 unnamed buildings labeled as Junk

Fire Insurance Plan, 1914:

-Ordnance Yard offices, sentry post, storehouses and clock tower
-Ship Chandler Hall
-Can Express Co's Offs (Canada Express Company's Offices)
-Wentzell's Gro. Whse (Grocery Warehouse)
-Wentzells Co. Ltd. Who. (Wholesale) & Retail Gro.
-Royal Bank of Canada
-Photographer
-Belwin & Co. Crockery
-Butcher
-Moving Picture
-Boarded play ground
-Who. Liquors
-Liq.
-Custom's Whse
-Scotia Pure Milk Co. Pasteurized Milk Fac.
-Sta.
-Shooting Gally
-Globe Hotel
-Picture Framer
-Paint Shop
-Clayton & Sons Retail
-McDonald & Co Brass Founders & Copper Sm's (Smiths) Fitting shop
-B. Sm (Blacksmith)
-Moving Pictures
-Clayton & Sons Storage
-B. Sm
-Board'g H'se (Boarding House)
-B'd'g Hse (Boarding House)
-Bakery & Conf. (Confectioners)
-Drugs
-Plumbr & Tinsm (Plumber & Tin Smith)
-Tripure Water Co. of Halifax
-Clayton & Sons Clothing Fac. (Factory)
-MacDonald & Co. Plumbers & Foundry Supplies Whse
-Glass Whse.
-Paint Shop
-Off. & Stock
-Soda Water Fac.
-Furn'e (Furniture)
-Marble Whs (Warehouse)
-Piano Repair Shop
-W. & A. Moir Machine Shop & Foundry off., sto., machine storage, brass foundry, pattern storage, and smithy
-Cobbler
-Copper sm. (smith)
-Carp. (Carpenter)
-Gro. Whse
-Photo's
-S.Brst
-Shingle Whse

-Chinese Laundry
-Coal Shed
-Coal & Gen'l W'Hses
-Commercial Cable Co. Cable Shed
-Cable Whse
-Stores Dept Work Shop
-T.A.S. De Wolf & Sons W'h'ses
-W. H. Schart & Son Coffee & Spice Mill
-Chinese Laundry
-Who. Paints
-Who. Whse.
-Hart & Nelson Flour & Feed Whses
-Hay in Bales Whse.
-Shingles
-Tin Sm.
-Chin. Laundry (Chinese Laundry)
-Tin Sm.
-Brookfield Bros. Lumber Storage
-Building Supplies Stge
-H.R. Silver Ltd. W'hses.
-Fish W'Hse
-H.R. Silver Ltd. Molasses W'h'se
-B. Sm.
-Sail Loft
-Marine Supplies
-H.R Silver Ltd. Who. Gen'l Whse.
-Marine Supplies
-Leather W'hse
-Mach. (Machine) Supplies
-Cunard & Co. Coal Sheds
-Bonded W'hse
-H.W. & Paint & Ship Chandler
-Board'g (Boarding house)
-S. Cunard & Co Off's
-Furn'e W'hse
-Excise Whse
-Furness Line Off
-Halifax Meal Mills Ltd
-Corn Mill Storage
-The Martin Senour Co. Ltd. Who. Paints & Oils
-Mach. Shop
-Excise W'Hse
-Smithy
-Harlan Fulton Hide W'hse and Copper Shop
-Block Fac.
-Carp. (Carpenter)
-Junk
-Metal
-19 unnamed restaurants
-13 unnamed groceries, produce and provision shops
-11 unnamed offices
-11 unnamed general warehouses and storage.

Fire Insurance Plan, 1951:

-Ordnance Yard offices, sentry post, storehouses and clock tower
-Office & Printing
-N.S. Light & Power Office
-Various Who. S.
-Who. Gro. Wh's'e
-Howard's Limited
-Who. Gro.
-R. B. Seeton Co. Limited
-Howard's Limited Flour & Feed Wh's'e No. 2
-W.J. Dowell & Son Ltd. Produce W'h'se
-Garage / Mach. Shop / Bicycles (former Trinity Church?)
-Who. Gro.
-Who.
-Globe Hotel
-Armature Winding
-Auto Storage
-Bakery Bt Conf.
-Clayton & Sons Ltd Clothing Factory
-Who. Paints Wh'se

-Halifax Beverages Bottling Works
-Wall paper & Paint Shop
-Off & Stock
-Cabinet Shop
-Ship Chandler Wh'se
-Rest.
-W. & A. Moir Limited Machine Shop & Foundry off, st'ge, pattern st'ge, brass foundry, smithy, mach. St'ge.
-Wm Collins & Sons Limited
-W'h'se & Off.
-Box St'ge
-Maritime Elevator & Equipment Co.
-Sub Power House
-Marine Equipment Store
-Mahar Transfer W'h'se
-Auto
-Cable W'h'se
-Commercial Cable Co. Cable Shed
-Mach. Shop
-B. Sm & Welding
-Brass Foundry
-Junk
-Union Offices
-T.A.S de Wolf & Son Ltd. W'h'ses
-Who. Paints
-Bonded Whse
-Brookfield Bros. Ltd Building Material Warehouse
-Building Material and Lumber storage
-Lumber Shed
-Storage W'h'se
-Paper W'h'se
-Fish & Barrels W'hse
-Fisheries Co Ltd. Fish W'h'ses
-Tin Sm.
-Who Gen'l Wh'se, Off. & St'ge
-Junk Whs'es
-Junk Whs'e
-Marine Supplies
-Rooms and Printing Off
-T.P. Lusby & Co. Limited Wh'se
-Sail Loft
-Mach. Shop
-Contractors W'h'se
-S. Cunard Co Limited. Coal Shed
- S. Cunard Co Limited. W'h'se
- S. Cunard Co Limited. No 2 Wh'se, Autos & Off.
-H.W. Paint & Shop Chandler
-Steamship Off
-Furness Withy & Co Ltd.
-Schofield Paper Co Ltd W'h'se
-No 1 W'h'se
-Who. Gro.
-W'h'se Off.
-Junk W'h'se
-Junk
-Marine Store
-Block Fac.
-13 unnamed general warehouses/storage
-13 unnamed offices

5.0 RESULTS AND DISCUSSION

Records preserved in the HRM and provincial archives do not make it clear where the material from the 150 demolished buildings was taken. Records indicate that just under $2,000 worth of fill from the area was removed and sold, but in excess of $8,000 worth of rock fill was brought in to dramatically change the landscape of the site. Specific notations were made regarding the salvaging of cobbles from Bell Lane, and the piece-by-piece dismantling of one end of both the Joseph Simon and Collins

Bank buildings.[37] It is not clear whether the building material from the other buildings was simply pushed over and used as fill, or whether it was hauled to a dump at no additional expense. In the absence of recorded hauling and dumping fees, the complete removal of this material may be the less likely scenario.

Quality topographic data of the pre-development interchange area could not be found in the course of this study. Therefore the exact nature of the changes to the local landscape cannot be determined. Given the general contours of the land in oblique aerial photographs taken in the first half of the twentieth century, the original landscape was likely a relatively smooth-contoured continuation of Citadel Hill. This suggests that the low underpass adjacent to Morse's Teas and Hollis Street was dug or blasted into the hill, while many other areas were built up.

The original city wall in this area was a very short-lived wooden structure that most likely ran down Citadel Hill just south of the modern Cogswell Street. These early maps are highly varied in accuracy, but on average most place Grenadier Fort partially beneath Scotia Square and possibly extending into the Interchange footprint near the Cogswell/Barrington intersection. Artifactual material from this period has a high probability of having survived, but most likely in a context disturbed by subsequent nineteenth and twentieth century activity. It is possible, but not likely, that structural evidence of the wall and forts has survived in proximity to the Interchange.

Two layout scenarios are currently being considered in relation to the Interchange redevelopment. The first is a "fine-grained approach," allowing low to medium intensity development with a street grid similar to the small-scaled and narrow streets in the downtown core to the south. The second is a "bookend to the downtown" approach allowing medium to high density development on larger streets and lots.

Archaeologically, both scenarios represent equal risk to potential archaeological deposits within the study area. Although historically speaking the "fine-grained" approach is more in character with the original layout of the city, either scenario will result in ground disturbance that will encroach upon land of high archaeological potential.

6.0 RECOMMENDATIONS AND CONCLUSIONS

A great deal of ground disturbance has occurred to create the Cogswell Interchange, and it is clear that some areas will likely rest on bedrock or culturally sterile soil, as records indicate that some stone footings and wharf timbers were removed. The relatively small expenditures for these removals, however, suggest that only small

[37] HRM Archives 1968.

areas were stripped bare of cultural material. In areas where roadbeds and other structures were built up with fill, there is very high potential for archaeological material to have been preserved, though whether it remains undisturbed or has been removed from its original context will not be known until excavations commence. It is expected that archaeological resources within the impact area will fall into three categories: commercial, residential, and military.

The scale of the Interchange and the likelihood of pockets of undisturbed or partially disturbed archaeological material scattered throughout the impact area means that an archaeological testing strategy would prove extremely impractical. Instead, it is recommended that an archaeologist be consulted during planning prior to demolition in order to implement archaeological monitoring protocols from the beginning. This will ensure that last-minute archaeological salvage will not delay the demolition and reconstruction projects. In addition to mechanical demolition, geotechnical testing and the removal of hydropoles can often raise archaeological concerns

It is also recommended that a meeting should be arranged with the Culture and Heritage Development Division of the Department of Communities, Culture and Heritage in order to firmly implement on-site protocols for all phases of work, particularly those involving significant ground disturbance.

Depending upon the scale of the ground disturbance activity, monitoring can usually be conducted by only a few archaeologists, with the team expanding as needed to mitigate archaeological material when it is encountered. When heavy equipment encounters archaeological resources, a complete halt in on-site machinery is not usually called for. Instead, other less sensitive areas can be worked by machinery while an archaeological team works to mitigate the encountered resources. Archaeological monitoring is recommended only for the duration of ground disturbance activities.

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Police Museum. 1967c. “Mahar’s Transfer Ltd 2111 Upper Water Street. 23 October 1967.” Exhibition Photographs, HRM Archives Retrieval Code 102-16N.

Police Museum. 1967d. “Looking south east along Upper Water Street showing S. Cunard Coal and Oil building. 23 October 1967.” Exhibition Photographs, HRM Archives Retrieval Code 102-16N.

Police Museum. 1967e. “James Simond’s Ltd 1855 Lower Water Street looking north east. 23 October 1967.” Exhibition Photographs, HRM Archives Retrieval Code 102-16N.

Police Museum. 1967f. “1959-1963 Upper Water Street looking north east fromm [*sic*] Bell Lane. 23 October 1967.” Exhibition Photographs, HRM Archives Retrieval Code 102-16N.

Police Museum. 1967g. “Barrington Street looking north east from Jacob Street. Salvation Army Hostel. 23 October 1967.” Exhibition Photographs, HRM Archives Retrieval Code 102-16N.

Police Museum. 1968a. “Barrington Street east side, now Cogswell Interchange. Taken from the Trade Mart. 4 March 1968.” Exhibition Photographs, HRM Archives Retrieval Code 102-16N.

Police Museum. 1968b. “Progress – Cogswell Street Interchange taken from the Trade Mart looking south east. 27 May 1968.” Exhibition Photographs, HRM Archives Retrieval Code 102-16N.

Police Museum. 1968c. “2100 Upper Water Street. Former military barracks, later a saloon. 5 June 1968.” Exhibition Photographs, HRM Archives Retrieval Code 102-16N.

Police Museum. 1968d. “Upper Water Street between Bell Lane and Jacob Street west side looking south, former John Howard and Leckie buildings, now Cogswell Interchange. 5 March 1968.” Exhibition Photographs, HRM Archives Retrieval Code 102-16N.

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APPENDIX A: HERITAGE RESEARCH PERMIT

NOVA SCOTIA

Heritage Research Permit (Archaeology)

Special Places Protection Act 1989

(Original becomes Permit when approved by Communities, Culture and Heritage)

Office Use Only
Permit Number:
A2013NS010

Greyed out fields will be made publically available. Please choose your project name accordingly

Surname de Boer | First Name Laura

Project Name Cosgwell Interchange Lands Plan

Name of Organization Davis MacIntyre & Associates Limited

Representing (if applicable)

Permit Start Date 04 March 2013 | Permit End Date 30 June 2013

General Location: Cogswell Interchange, metropolitan Halifax

Specific Location: *(cite Borden numbers and UTM designations where appropriate and as described separately in accordance with the attached Project Description. Please refer to the appropriate Archaeological Heritage Research Permit Guidelines for the appropriate Project Description format)*
20 T 454263.84 m E 4944409.26 m N (WGS84)

Permit Category:
Please choose one

- ☐ Category A – Archaeological Reconnaissance
- ☐ Category B – Archaeological Research
- ☑ Category C – Archaeological Resource Impact Assessment
- ☑ I certify that I am familiar with the provisions of the *Special Places Protection Act* of Nova Scotia and that I have read, understand and will abide by the terms and conditions listed in the Heritage Research Permit Guidelines for the above noted category.

Signature of applicant April MacIntyre for Laura de Boer | Date 19 February 2013

Approved by Executive Director Bill Mehan | Date March 8 / 2013