City of Owen Sound
Regional Recreation Centre
Traffic Impact Study &
Transportation Review

February 17, 2010

Owen Sound

HDR | iTRANS

Agenda

1. Introduction
2. Proposed Development
3. Project Scope and Approach
4. Study Findings
5. Recommendations

Introduction

- City of Owen Sound retained HDR Corporation (HDR | iTRANS) to complete a Traffic Impact Study (TIS) and provide transportation advice for the proposed Regional Recreational Centre

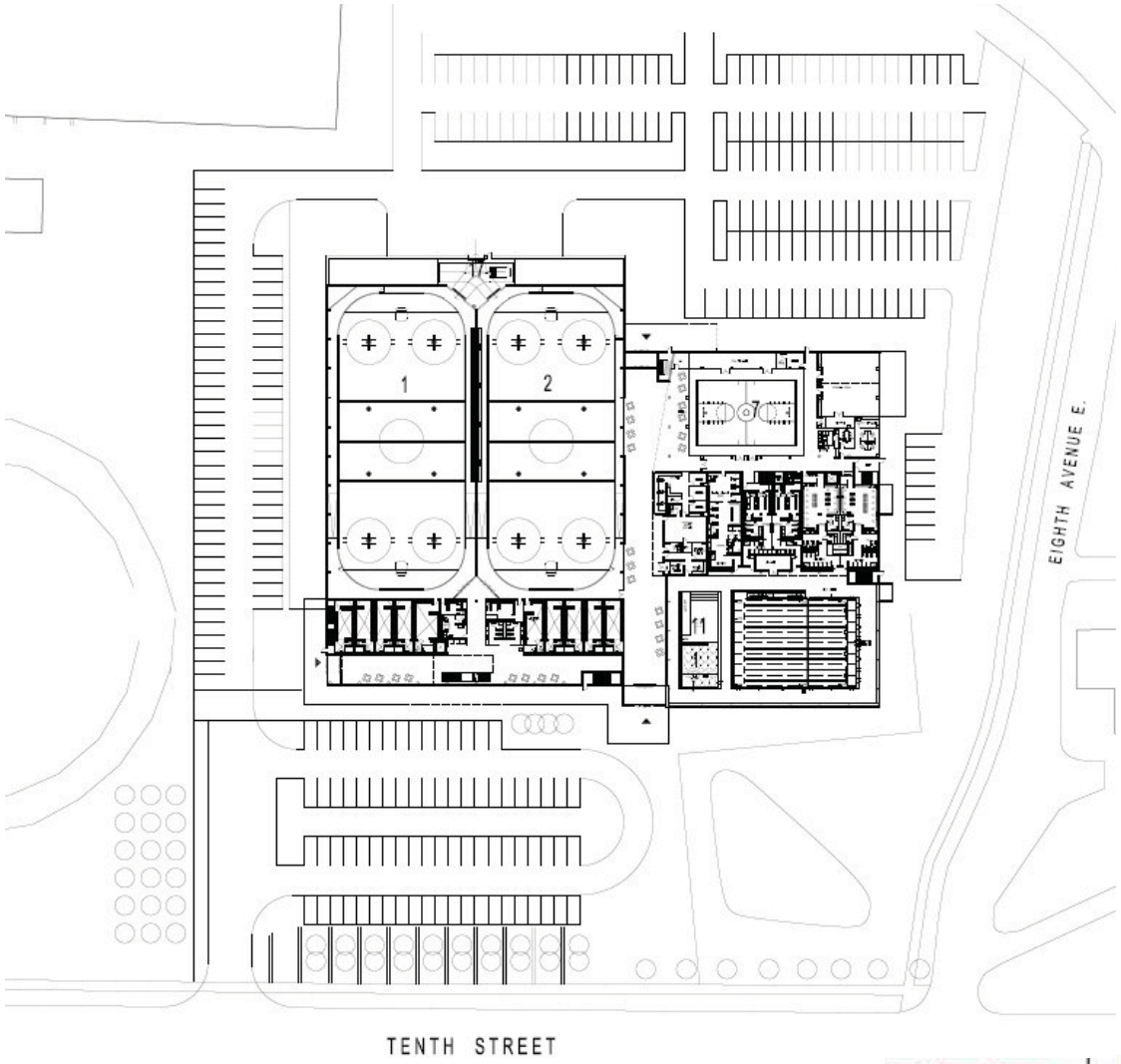
- Purpose of the study has been to assess the potential traffic impacts that the proposed Recreational Centre will have on the surrounding roadway network, and to identify required transportation infrastructure in order to accommodate the development

Study Area


3rd Avenue East
6th Avenue East
7th Avenue East
8th Avenue East
15th Street East
16th Street East
10th Street East
7th Avenue East
8th Avenue East
9th Avenue East

Proposed Development

- Located in the north-west quadrant of the intersection of 10th Street East and 8th Avenue East
- For study purposes the RRC comprised of:
  - Twin Ice Rinks and Change Rooms (51,893 sf)
  - Gymnasium (5,382 sf)
  - Aquatics Facility (27,351 sf)
  - Multi-Purpose Room (3,100 sf)
  - Senior Programming Room (1,292 sf)
  - Common Area (7,900 sf)
  - Fitness Area, Studio, and Track (8,944 sf)
  - **Total Square Footage of 105,863 sf**



Project Scope & Approach

- Scope of Work
- Existing Traffic Conditions
- Background Traffic Conditions
- Trip Generation and Distribution
- Future Total Traffic Conditions
- Items of Special Consideration
- Parking Generation
- Site Plan Review

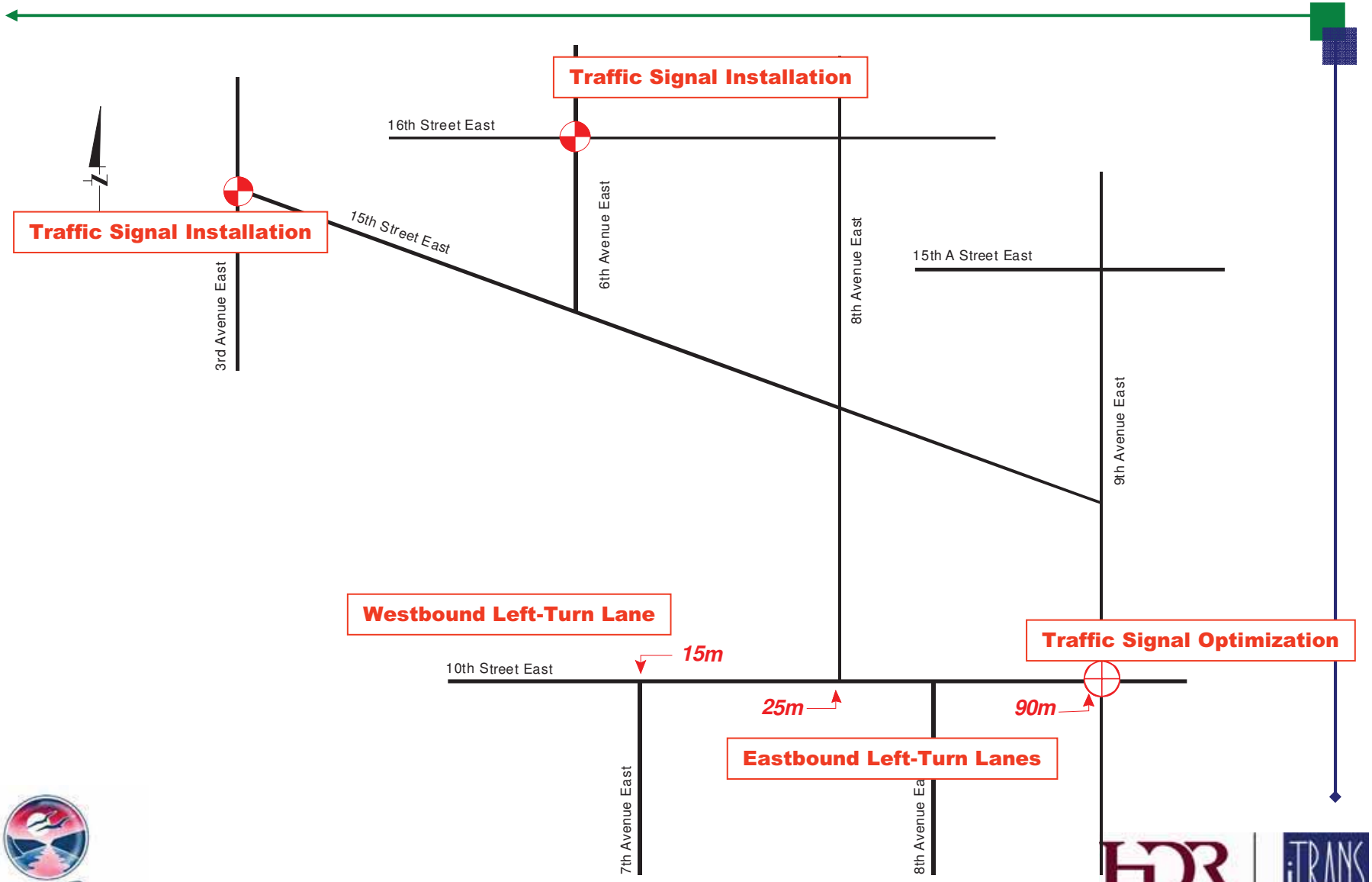
Scope of Work

- Horizon Years
  - 2009 (existing conditions)
  - 2011 (opening day)
  - 2016 (5-year horizon)
  - 2026 (15-year horizon)

- Time Period
  - Weekday PM peak period

- Study Intersections
  - 10th Street East at 7th Avenue East
  - 10th Street East at 8th Avenue East
  - 10th Street East at 9th Avenue East
  - 9th Avenue East at 15th Street East
  - 9th Avenue East at 15th Street East 'A'
  - 8th Avenue East at 15th Street East
  - 8th Avenue East at 16th Street East
  - 6th Avenue East at 15th Street East
  - 6th Avenue East at 16th Street East
  - 3rd Avenue East at 15th Street East

Study Findings – Existing Conditions



Background Traffic Conditions

- Planned Roadway Improvements
  - Proposed extension of 10th Street East from Lamson Crescent to 16th Avenue East
    - Planned for 2010, thus extension has been incorporated into all horizon years
    - Assumed that additional traffic will be split equally between eastbound and westbound
    - All traffic that has been added to 10th Street East has been removed from 9th Avenue East

Background Traffic Conditions

- Background Developments
  - Villarboit Owen Sound Commercial Traffic Impact Study, January 2009
  - Developments pro-rated for the 2016 horizon year based on the number of building permits issued per year
  - Assumed that 58 building permits will be issued each year between 2011 and 2016 horizon years
  - Results in approximately 44% of the background development included in the 2016 horizon year with remaining 56% included in 2026 horizon year

Background Traffic Conditions

- Traffic Growth
  - Review of historical traffic growth on City roadways determined that the average growth rate is less than 1% per annum
  - Projected population growth for Owen Sound is less than 1% per annum
  - A growth rate of 1% per annum was applied for 2011, and 2016 horizon years, and 0.5% was used to develop background traffic volumes to the 2026 horizon

Trip Generation and Distribution

- Trip Generation
  - Estimation of trip generation was carried out using the Institute of Transportation Engineers (ITE) guidelines and undertaking surveys of existing proxy sites
  - ITE document, Trip Generation, 8th Edition, provides method for calculating trip ends as a function of gross floor area (GFA)
  - Land Use Code 495 – Recreation Community Centre
    - Published trip rates were based on data obtained from small sample size
    - Rates represent peak period of adjacent street traffic
    - Does not include ice rink
  - Determined that proxy sites should be surveyed in order to obtain relevant trip generation data

Trip Generation and Distribution

- Trip Generation – Proxy Sites
  - Sites were selected based on similar amenities and operating characteristics as well as similar catchment areas and population

	Recreation Centre	Twin Pad Rink
Site Selected for Survey	Niagara Centre YMCA	Peach King Centre
Address	310 Woodlawn Road, Welland	162 Livingston Avenue, Grimsby
Approximate Size	55,000 sq. ft.	62,400 sq. ft.
Approximate Parking	204 parking stalls	250 parking stalls
Site Components	▪ 25 metre 4-lane pool ▪ Leisure pool with swirl pool ▪ Gymnasium ▪ 2-lane indoor walking track ▪ Multi-purpose program room ▪ Fitness Centre with cardio	▪ Twin pad rink surfaces ▪ Upper level viewing deck ▪ Dressing / Change rooms ▪ Rink office ▪ Lobby (snack bar) ▪ Program rooms

Trip Generation and Distribution

- Trip Generation
  - Trip generation rates developed based on the results of the proxy surveys are higher than those published in the ITE Trip Generation , 8th Edition and are therefore a conservative estimate
- Modal Split & Synergy Reductions
  - A modal split reduction of 5% was applied to account for transit, walking, and cycling use to and from the RRC
  - A site synergy reduction of 10% was applied for internal interaction trips
  - Resulting trip generation is estimated to be 139 inbound and 119 outbound trips during weekday PM peak hour

Trip Generation and Distribution

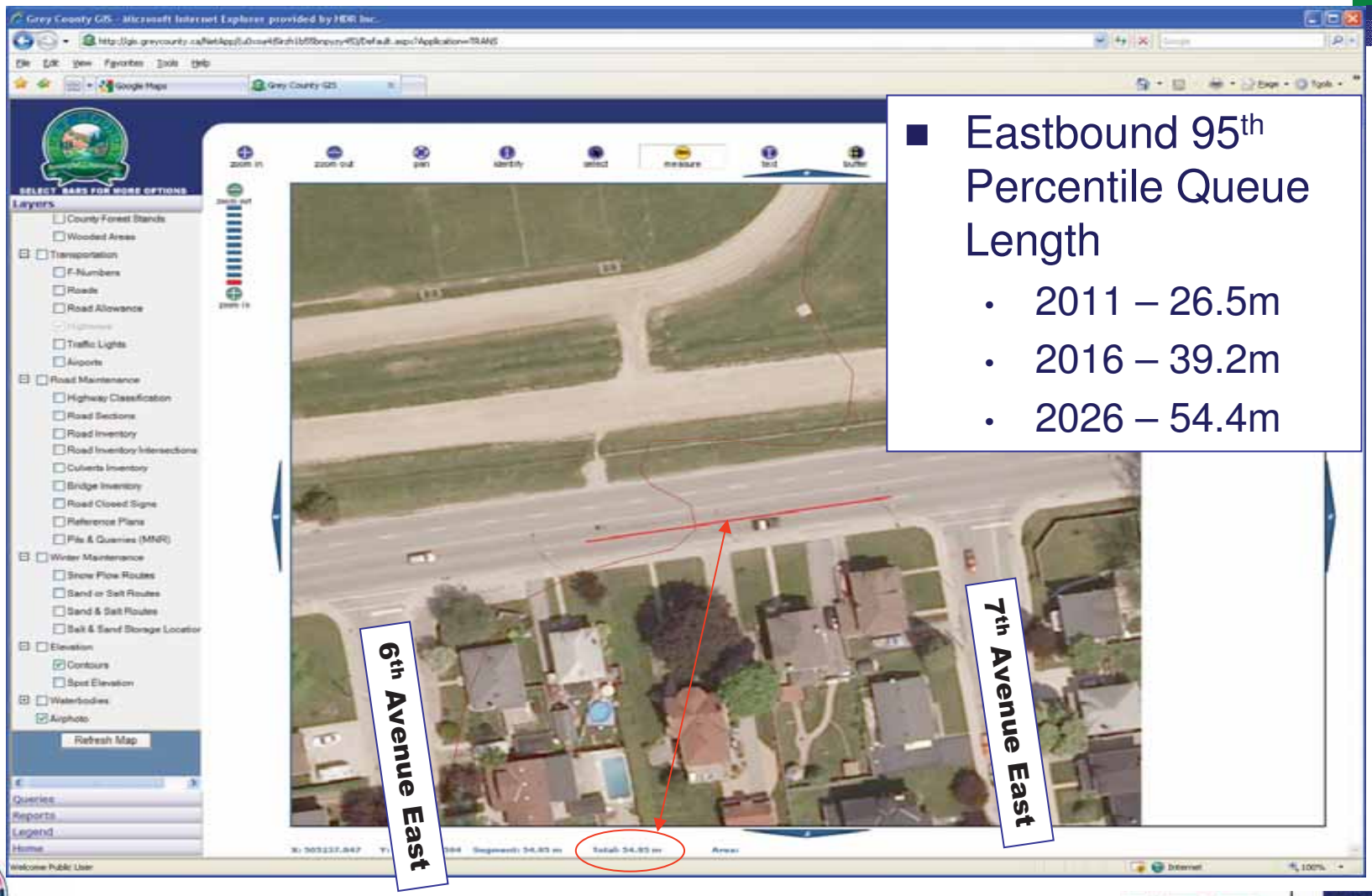
- Trip Distribution
  - The RRC is assumed to be a region-wide facility that will draw patrons equally from all neighbourhoods.
  - It was assumed that the site is a destination, and that the majority of trips will start and end at home.
  - Assumed that visitors will be familiar with the City and the surrounding road network.

To/From	Via	Site Traffic Distribution	
		IN	OUT
North	8th Avenue East and 9th Avenue East	25%	25%
South	9th Avenue East	15%	15%
East	10th Street East	5%	5%
West	10th Street East	55%	55%
TOTAL		**100%**	**100%**

Future Total Traffic Conditions

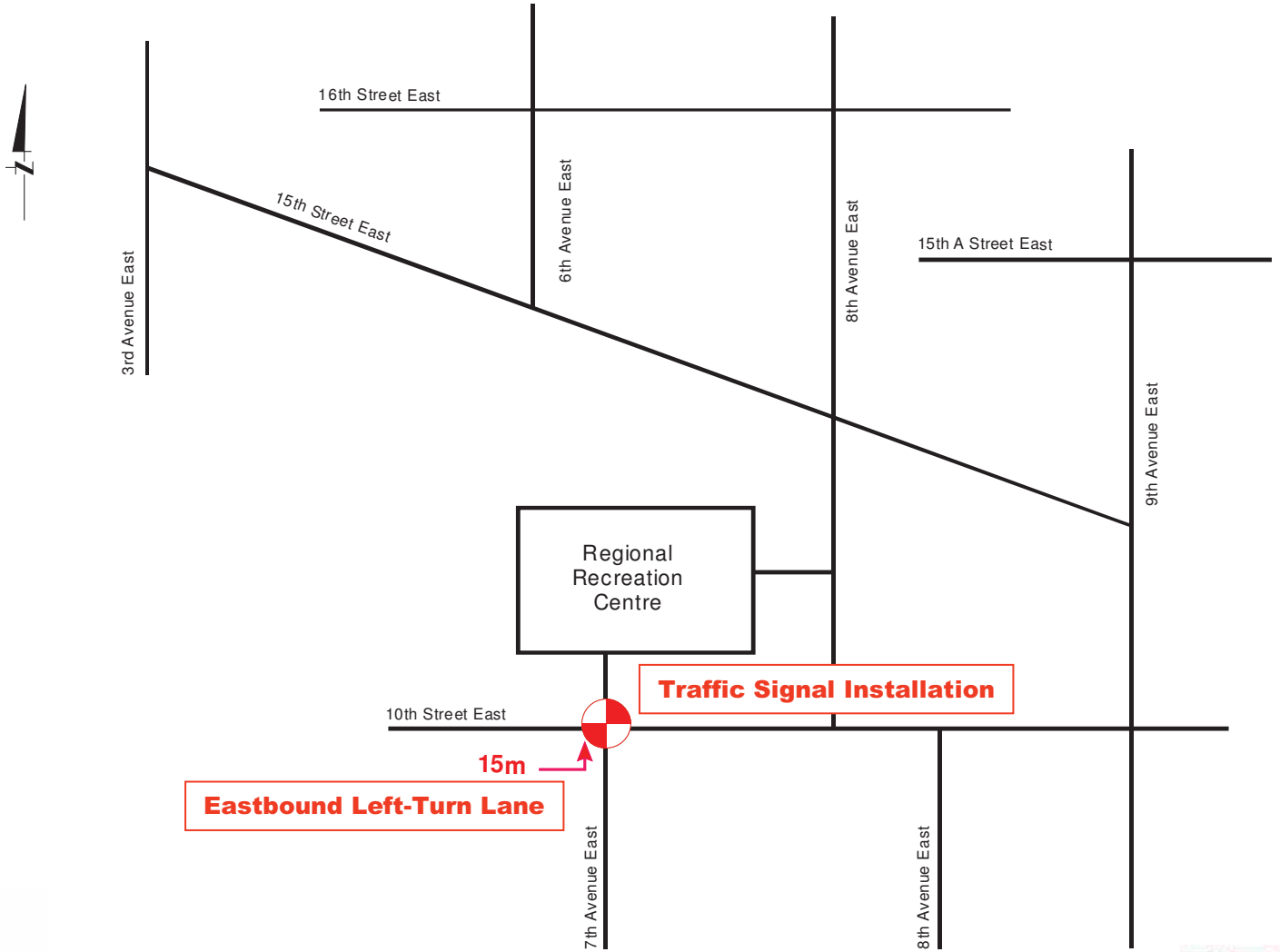
- Due to vertical alignment of 10th Street East, the intersection of 10th Street East at 7th Avenue East / RRC Driveway does not achieve minimum sight distances
- Recommended that this intersection be signalized upon completion and occupancy of the RRC
- Recommended that exclusive eastbound and westbound left turn lanes be provided at 10th Street East and 7th Avenue East / RRC Driveway to improve intersection operations and minimize the risk of eastbound rear-end collisions

Future Total Traffic Conditions

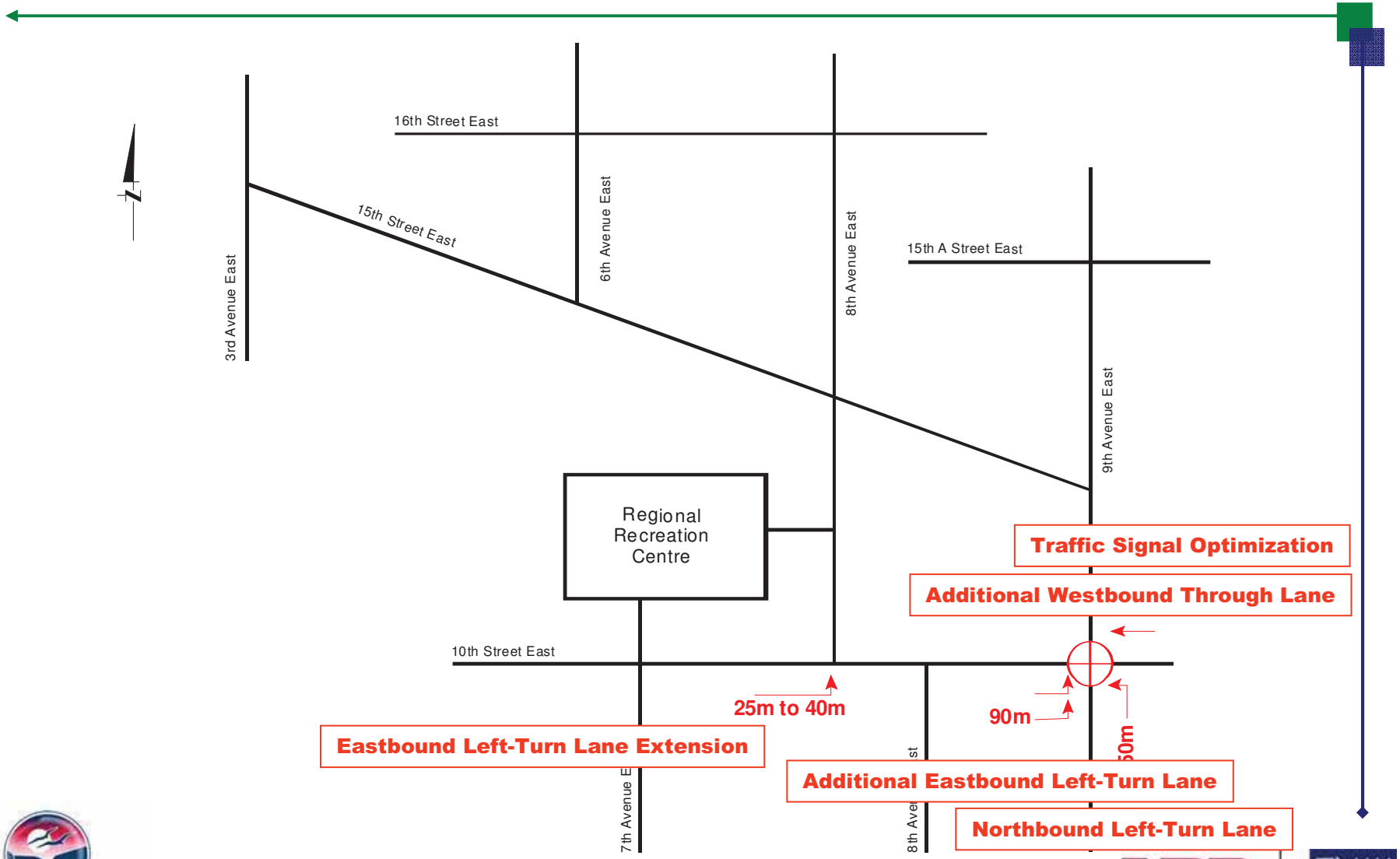


- Eastbound 95th Percentile Queue Length
  - 2011 – 26.5m
  - 2016 – 39.2m
  - 2026 – 54.4m

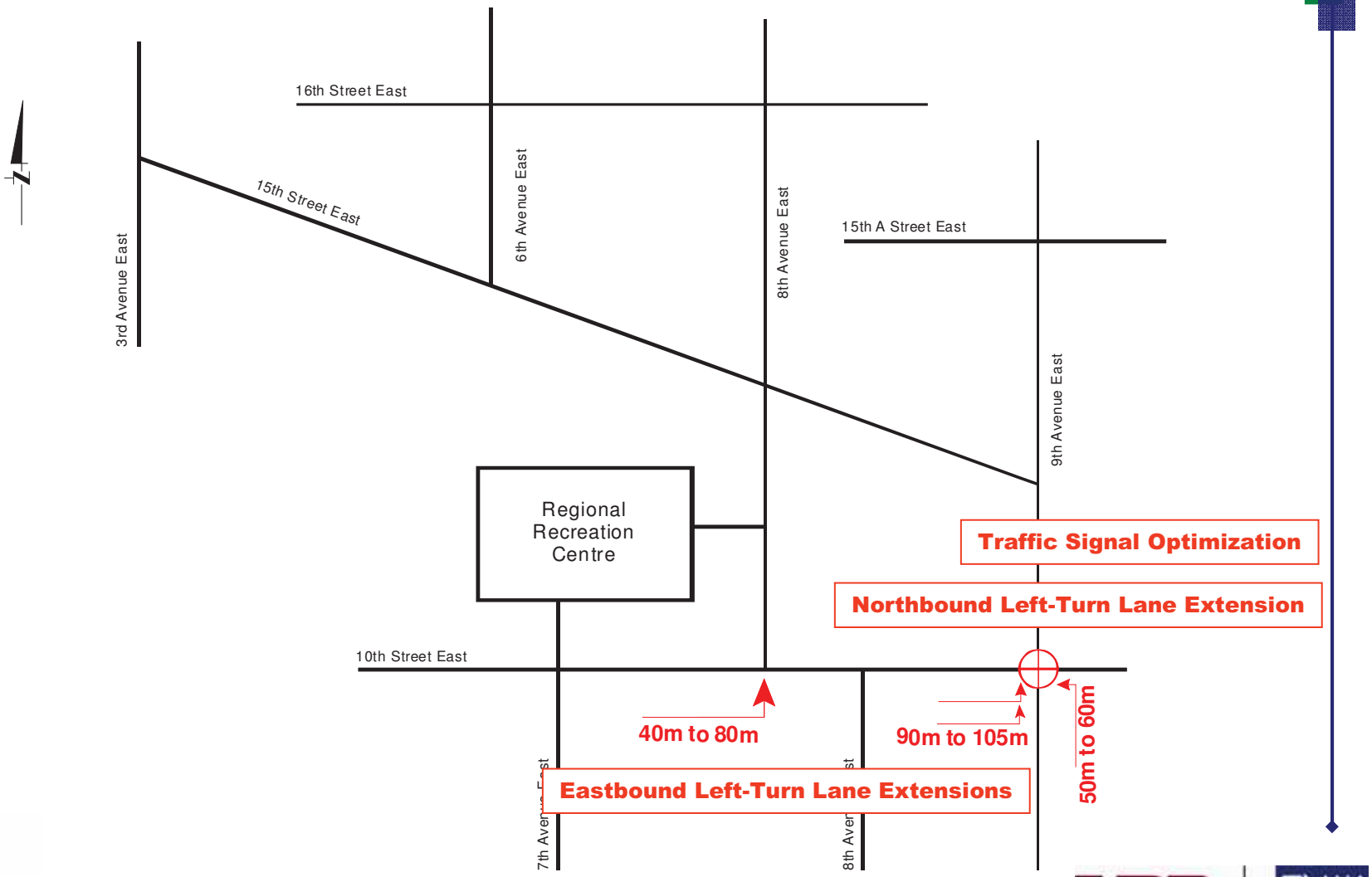
Study Findings – 2011 Total Traffic



Study Findings – 2016 Total Traffic



Study Findings – 2026 Total Traffic



Items of Special Consideration

- Operation of 15th Street East
- Realignment of 8th Avenue East
- Operation of 15th Street East and 6th Avenue East
- Site Access Opposite 7th Avenue East

Items of Special Consideration

- Operation of 15th Street East
  - Current operation of 15th Street East was examined to determine if there was any benefit to modifying the operation of the roadway
    - Conversion to one-way
    - Implementation of dead-end at the eastern terminus
    - Restricting turning/traffic movements at 9th Avenue East
  - Analysis of alternatives show that 15th Street East would operate most effectively if left as-is due to relatively low traffic volumes
  - Modifying the operation of the roadway via a dead-end condition or restriction of movements was found to create undesirable impacts to the surrounding road network

Items of Special Consideration

- Realignment of 8th Avenue East
  - The potential to realign the currently offset intersection of 8th Avenue East and 10th Street East was examined
  - Currently offset by approximately 56m
  - To realign the intersection in order to construct a standard 4-leg intersection would result in significant impact to adjacent properties including 4 residential properties south of 10th Street East and the Tommy Holmes VC Memorial Armoury north of 10th Street East
  - Operational perspective, the realignment of 8th Avenue East is feasible, however, it would result in significant property impacts

Items of Special Consideration

- Operation of 15th Street East and 6th Avenue East
  - Field observations show that eastbound 15th Street to 6th Avenue and vice versa was the predominant movement and operating under free-flow conditions
  - Existing pavement markings provide positive guidance and reinforce the free-flow nature of the roadway
  - Southbound left turn vehicles experience obstructed sightlines due to grade of the 15th Street East which makes it difficult to perceive on-coming vehicles traveling eastbound up the hill
  - Assumed that the low volume of southbound left turns is due to the obstructed visibility and motorists use alternate routes when traveling eastbound

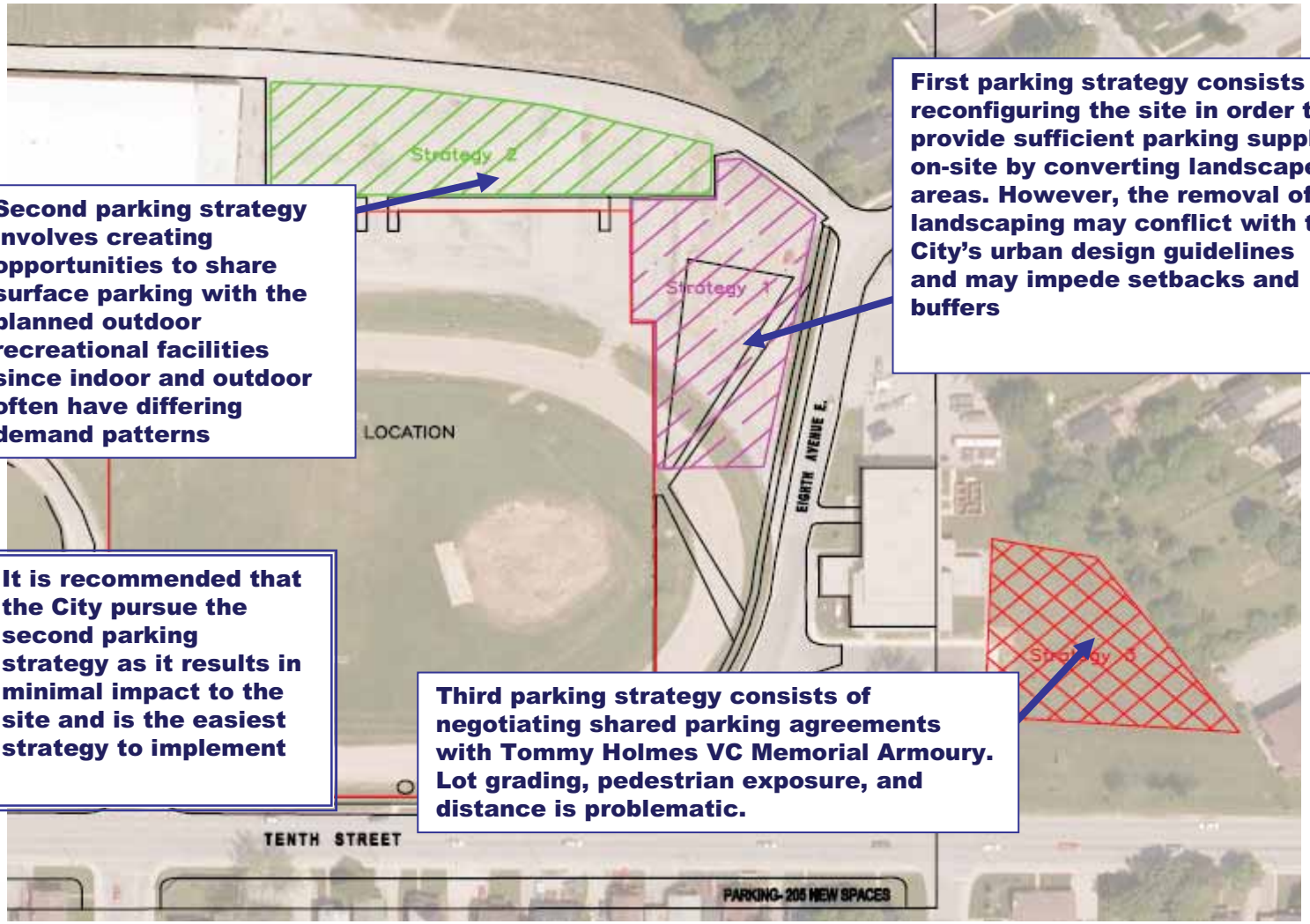
Items of Special Consideration

- Operation of 15th Street East and 6th Avenue East
  - It was determined that traffic signals are not warranted under existing or future traffic volumes
  - Sight line analysis indicates that minimum stopping sight distance for eastbound vehicles approaching 6th Avenue East is sufficient
  - Minimum turning sight distance for southbound left turn vehicles is not sufficient
  - Recommended that the following measures be implemented to address the sight line deficiencies:
    - Restriction of southbound left turn movements onto 15th Street East in order to reduce potential for turning movement collisions
    - Channelization of the southbound right turn / eastbound left turn movement by way of a raised island
  - The implementation of the measures should be staged to gauge the effectiveness of the signage before channelization is provided

Parking Generation

- Latest site plan illustrates a parking yield of 293 parking spaces.
- Same Proxy locations surveyed for trip generation was surveyed to determine parking rate
- Peak parking rates of 2.85 / 1000ft^2 for arena and 2.93/1000ft^2 for Recreation Centre were obtained from Proxy sites
- Applied to the RRC to determine an estimated parking demand of 306 vehicles
- The current 293 parking spaces is insufficient, but several parking strategy options may be pursued in order to provide sufficient parking supply

Parking Generation



Second parking strategy involves creating opportunities to share surface parking with the planned outdoor recreational facilities since indoor and outdoor often have differing demand patterns

First parking strategy consists of reconfiguring the site in order to provide sufficient parking supply on-site by converting landscape areas. However, the removal of landscaping may conflict with the City's urban design guidelines and may impede setbacks and buffers

It is recommended that the City pursue the second parking strategy as it results in minimal impact to the site and is the easiest strategy to implement

Third parking strategy consists of negotiating shared parking agreements with Tommy Holmes VC Memorial Armoury. Lot grading, pedestrian exposure, and distance is problematic.

Site Plan Review

- Site Circulation
  - Circulation of vehicles on-site provided via two site-accesses:
    - Direct access to 10th Street East via driveway opposite 7th Avenue East
    - Secondary access to 8th Avenue East
  - Hierarchy of circulatory aisles could be improved as primary aisle through the site is used for both circulation and to access adjacent parking
    - This can lead to increased congestion and may result in excessive queuing
    - Allowing parking manoeuvres to occur within the primary circulatory aisle increases the potential for conflicts

Site Plan Review

- Sidewalk and Bicycle Facilities
  - Provision of dedicated pedestrian / cyclist facilities will achieve separation between vehicular and pedestrian / cyclist traffic, improving site operations, and achieving a safer environment for vulnerable users

Site Plan Review – Recommended Improvements

- Site Circulation
  - Provide a dedicated internal road connection that can be assessed by the site driveway to 10th Street East, as well as secondary site driveway to 8th Avenue East
  - Disbenefit is a potential loss in parking spaces
- Preferred Access Location
  - In addition to the access to 10th Street East, provide a full-moves access to 8th Avenue East opposite Tommy Holmes VC Armoury
  - Result in improved on-site circulation, reduced potential for site congestion and reduced queuing.
  - Provision of this access will also enable transit vehicles to access the site

Site Plan Review – Recommended Improvements

- Revised Parking Layout
  - Existing parcel of land just north of the site can be utilized as surface parking
  - Aisles be widened to 6.4m with a typical parking space 5.8m long by 2.7m wide
  - Achieves a satisfactory parking yield

Site Plan Review – Recommended Improvements

- Sidewalk and Bicycle Facilities
  - 10th Street East sidewalk on north side should connect to 4th Avenue East and 9th Avenue East resulting in connectivity to existing sidewalk network
  - Sidewalk be provided adjacent to the 8th Avenue East site access to define the pedestrian connection into the site and linkage with existing Transit stop on 8th Avenue East.
  - On-site pedestrian facilities should be provided by way of an internal sidewalk network which provides safe access to the main entrance of the centre, should be a minimum of 2m wide and designed in accordance with accessibility standards
  - Bicycle racks should be provided within a well-lit area that is easily accessible and near the main entrance to the centre

Site Plan Review – Recommended Improvements

- Transit Operations
  - Discussions with Staff at Owen Sound Transit indicate there is potential to service the RRC via on-site transit facilities.
  - Owen Sound Transit will only commit if the site driveway at 10th Street East and 7th Avenue East is signalized due to concerns of delays to transit vehicles if site driveway was unsignalized.

Recommendations

- Based on results of traffic impact study, that the proposed Regional Recreational Centre be approved based on the conclusions that the RRC will have impacts on the surrounding road network which can be mitigated with provision of turning lanes, upgrades to traffic control, and optimization of existing traffic signal timings

- That the City proceed with undertaking a Schedule 'B' Municipal Class Environmental Assessment for the improvements required along the 10th Street East corridor