

Economic Impact Assessment of the Rivers District Revitalization in Calgary

Understanding the role and economic impact
of the proposed Rivers District projects

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Report Authors: EY LLP

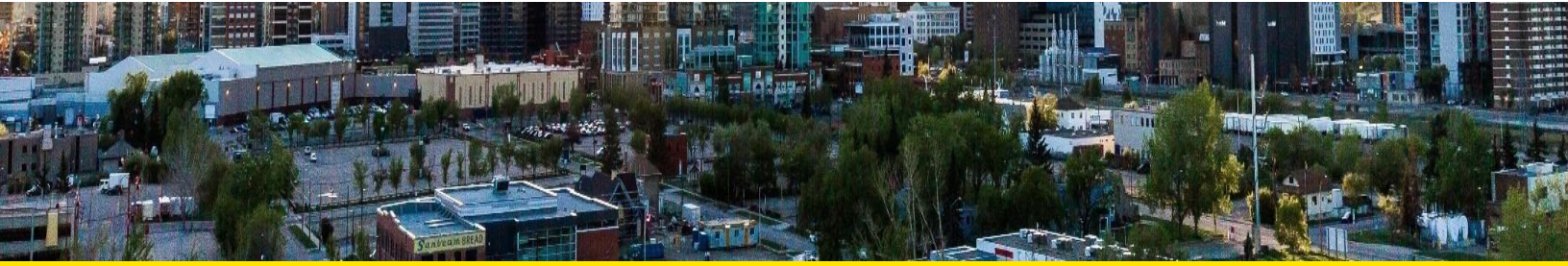


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Executive Summary

Recent years have proven to be both challenging and exciting for Calgarians. Except for 2009, Calgary experienced 24 years of sustained economic growth from 1990 - 2014.¹ From 2004 to 2014 the city's economy expanded by almost 45%.² However, the rapid decline in the price of oil beginning in 2014 brought over two years of economic decline and a slower pace of growth.

To build a more resilient economy with the goal of once again leading growth in Canada, the city adopted "Calgary in the New Economy, the Economic Strategy for Calgary" in June 2018. This strategy strives to uphold Calgary's vision of being 'A great place to make a living, a great place to make a life' and enhance the reputation and image of the city as a great place to live, work and play. The Rivers District Revitalization ("RDR") is a comprehensive plan consisting of three major projects that work in concert with each other, as well as an overall master planning document (Rivers District Master Plan, "RDMP") to redevelop and revitalize the Rivers District. These plans are a key component of the city's plans to achieve its new strategy.

Today, the East Village portion of the Rivers District has seen a significant level of development through nearly \$400 million in infrastructure investment that has attracted approximately \$3 billion of planned, private investment. In contrast to East Village, the east Victoria Park portion of the Rivers District is underutilized and development has remained stagnant. The RDMP was developed to create an integrated vision that guides development so that it is conducted in a deliberate and coordinated manner and optimizes both investment spending and overall citizen experience.

As part of this plan, three key infrastructure projects have been identified as being catalysts to revitalization: an expansion of Arts Commons; an expansion to the BMO Centre and the construction of a new Event Centre. Ernst & Young LLP (EY) has been engaged to perform an economic impact assessment ("EIA") of the proposed projects to the city of Calgary. The intent of this report is not to provide a recommendation for the proposed projects but to simply inform citizens and decision-makers within the city about the potential impacts of the developments. It is important to note that this report focuses on the impacts of these projects in aggregate and does not consider funding scenarios or implications, opportunity costs of alternative uses of funds or land development, or more generally, an assessment of the net cost-benefit of the proposed projects. The assessment is focused on the direct and indirect economic impacts and has taken a more conservative approach where possible.

To understand the impacts, relevant data was obtained from primary stakeholders which was then used to drive modelling efforts and enable directional projections on factors such as local GDP, job creation, labour income and output. After analyzing the impact of operational and capital expenditures related to





1 Calgary Economic Development (CED)

2 Ibid.



these three projects, there is a substantial positive impact related to jobs, labour income, GDP and output, as seen in the table below:

Table 1. Summary of Economic Impacts from Expenditures

				
Expenditure Type	Person-Year FTEs	Wages (\$ mn.)	GDP (\$ mn.)	Output (\$ mn.)
Capital Expenditures (2019 to 2026)	4,750	413	602	1,701
Operational Expenditures (annually, starting 2024)	1,536	161	168	297

Notes: Capital expenditures are one time contributions to the local economy as they relate to the duration of the construction activities which are from 2019 to 2026.
 Operating expenditures are annual contributions to the local economy, and the associated FTEs are indicative of the ability to sustain those jobs annually. The values presented above for operational expenditures represent the expected annual impact starting in 2024.

To drive further insights on realized and projected outcomes from other notable economic development projects in cities that have undergone similar development transformations, four comparator jurisdictions were also examined, including: the Ice District in Edmonton, Union Station in Denver, the Arena District in Columbus, and Nashville Yards. The economic impact projections for the Rivers District Revitalization in Calgary are directionally consistent with those observed in these four jurisdictions. A key component of success for similar developments is the effective utilization of a master plan, which ensures key projects are planned such that they establish synergies with each other, allowing for an effect where the sum is greater than the parts. In all cases examined, after the initial investment had been made, the comparator jurisdictions experienced significant levels of follow on private investment related to restaurants, hotels, retail and commercial opportunities. The magnitude of follow on private investments in each jurisdiction was several hundred million dollars.

To be as comprehensive as possible, this report also examines the impact on cultural, social, connectivity and tourism impacts. These are the additional impacts (both positive and negative) that can also be expected. Overall, the RDR would be expected to have a positive impact on city and its residents when assessing qualitative factors. For example, the project will support arts and culture that is likely to improve the quality of life for Calgarians, as well as the overall improvement on the perception of the city, which would help drive tourism and potential employment. Connectivity and accessibility may also improve because of several planned infrastructure investments that are part of the proposed development plan.



Finally, to complement both the quantitative and qualitative analysis and consider other impacts that would not be captured in the economic model, an extensive review of relevant academic, industry, and government literature and research was performed. The results of the literature review are inconclusive as various groups differ in presenting a positive, neutral or negative impact of similar developments.

Taking all of this into account, the quantitative analysis suggests that there is a positive economic impact to the city based on completing these three projects as part of the Rivers District Revitalization. Qualitative and comparator analyses also indicate that the proposed developments can enhance the social and cultural foundation of the city, providing facilities and public places for all Calgarians to use and enjoy.



1. Introduction and Scope

The Rivers District poses an intriguing opportunity to kick-start urban development in Calgary’s downtown core and help develop the city centre as the heart of a world-class city where people want to live. Calgary Economic Development (CED), in partnership with Calgary Municipal Land Corporation (CMLC), has engaged EY to work with key stakeholders to understand the economic impact of building the proposed culture and entertainment district in the Rivers District on the city of Calgary.

Key Geographic Terms and Uses

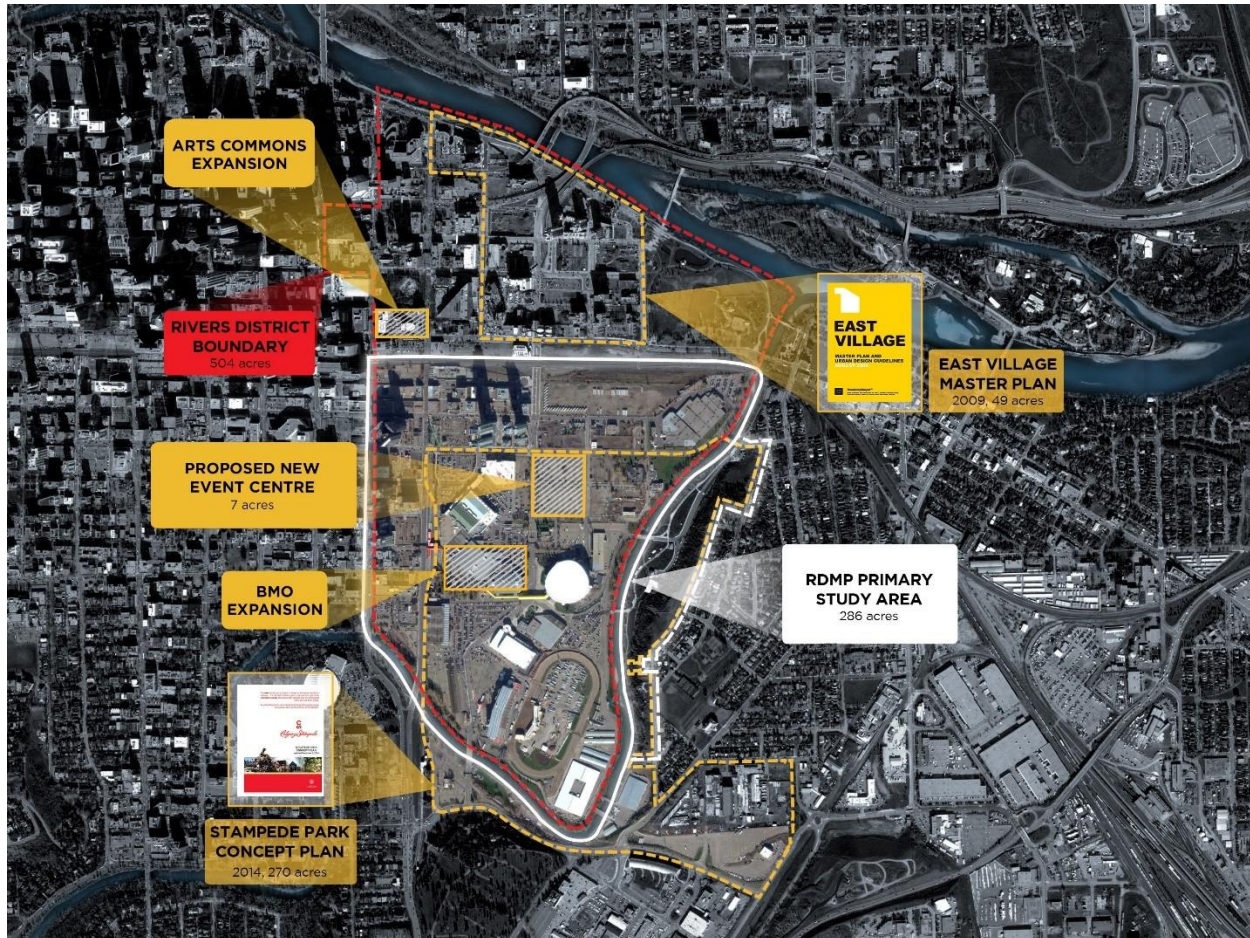
This report is intended to evaluate the impact of the Rivers District Revitalization on the city of Calgary. For this, it is important to understand several key terms used throughout the report:

- **Rivers District:** Refers to the 504-acre district and CRL boundary that lies at the confluence of the Bow and Elbow rivers and includes several distinct areas such as East Village, Fort Calgary and east Victoria Park.
- **Rivers District Master Plan (“RDMP”):** Refers to the master plan developed by Calgary Municipal Land Corporation (“CMLC”) encompassing a smaller 286-acre subset of the Rivers District, also known as east Victoria Park.
- **Rivers District Revitalization (“RDR”):** Refers to the scope of this EIA which includes developments within the RDMP and the three proposed major projects: the expansion Arts Commons, the expansion of the BMO Convention Centre and the construction of a new Event Centre.

Refer to Figure 1 for a better understanding of the differentiation between these terms.



Figure 1: Boundaries of the Rivers District, RDMP study area, and Rivers District Revitalization



Description of the Rivers District Revitalization

The Rivers District lies at the confluence of the Bow and Elbow rivers and is conveniently located close to downtown Calgary. The District has long been known as the centre of Calgary’s culture and entertainment scene and encompasses some of the Calgary’s most notable landmarks including the Calgary Stampede, BMO Centre and the Saddledome. Although the area draws over 3 million visitors per year, the Rivers District today is an underutilized portion of real estate with the potential to become a world-class culture and entertainment district. The RDR considers a substantial investment in the district, including three significant construction projects:

- Expansion of Arts Commons
- Expansion of the BMO Centre
- Construction of a new Event Centre

The results of this investment would be lively, high-density, mixed-use district that draws on the spirit of entertainment and contributes to a culturally vibrant and healthy community in Calgary.



Scope of the Report

The scope of this report is focused on the three primary projects mentioned above (expansion of Arts Commons, expansion of BMO Centre and construction of a new Event Centre). The primary areas considered when looking at impacts are those within the Rivers District Master Plan (“RDMP”) study area, and potential impacts on adjacent neighborhoods are noted where appropriate.

Out of Scope Items

Any considerations and analysis related to funding structures or arrangements, such as public subsidization of any of the facilities, are out of scope. Additionally, all cost-benefit analysis or opportunity-cost analysis is also out of scope.

Key Questions Addressed

This report looks to answer several key questions, including:

- What impact will the revitalization of the Rivers District have on the local economy?
- How will these investments contribute to GDP, labour income, employment and output?
- Will there be spillover effects to other sectors of the economy in Calgary? How significant?
- What could the value of a thriving cultural and entertainment sector be for the community?
- How will the Rivers District Revitalization contribute to the goal of establishing Calgary as a vibrant culture and entertainment destination in Canada and around the world?
- What impacts have other jurisdictions experienced when completing similar developments?

Key Stakeholders

It is important to critically evaluate the potential impact of any investment in the community to ensure that all concerned stakeholders have all the relevant information. The stakeholders involved as part of this analysis include:

- Arts Commons
- Calgary Arts Development
- Calgary Economic Development
- Calgary Municipal Land Corporation (CMLC)
- Calgary Sports and Entertainment Corp.
- Calgary Stampede

Key Message: The purpose of this report is to assess the economic and qualitative impacts of the proposed Rivers District Revitalization, including the (1) expansion of Arts Commons, (2) expansion of the BMO Centre, and (3) construction of a new Event Centre.



2. The Rivers District and Calgary Today

2.1. East Victoria Park Today

East Victoria Park has long stood as the city's entertainment epicentre, and is home to some of Calgary's most iconic landmarks, such as the Calgary Stampede and Saddledome. As the city's oldest neighbourhood, the area has long been neglected despite its character and interesting architecture that includes several heritage buildings. Except for certain events throughout the year, the area today is generally underutilized and covered in large part by surface parking lots. The RDR is an opportunity to build on the neighbourhood's heritage to create a successful culture and entertainment district that stimulates private investment and will ultimately change the perception of both the area and the city.

2.2. Surrounding Areas Today

While the primary focus of this assessment was to evaluate the impact of the Revitalization on the RDMP study area, the projects under consideration would likely cause spillover effects into the surrounding areas. These spillover effects could be either positive or negative and would influence factors such as property values, wages, the environment, employment, as well as having impacts on culture, society, connectivity and tourism in the city of Calgary.

One surrounding area of note is East Village, which lies to the north of the RDMP study area. Like the RDMP study area, East Village was formerly one of Calgary's most underdeveloped districts and its reputation as such left it unable to attract private investment. In response to this, CMLC was formed with the mandate to revitalize the Rivers District starting with East Village. Since that time, several large investments in the area have been made, including building the RiverWalk, revitalizing St. Patrick's Island and constructing the recently completed and globally renowned new Central Library. This intervention has proven to be highly successful as evidenced by the major private, follow-on investments that have occurred in the area, including the construction of numerous high-rise residential condominium units, small and medium sized retailers and restaurants. The significant momentum has increased the perception and popularity of East Village, changing the demographic profile and attracting new residents and visitors.

Table 2 presents some information about the areas in and around east Victoria Park (including East Village) that are likely to capture these spillover effects. For a more in-depth discussion on potential spillover effects, see section 9 of this report.



Table 2: Details of Surrounding Areas

Details	East Village	Ramsay	Inglewood	Beltline	Mission	Erlton	Core
2018 Population	3,543	2,187	4,072	24,887	4,673	1,303	8,464
Change from 2016	9%	3%	5%	13%	5%	4%	-3%
Demographics (approximate, based on 2016 population distributions)							
65+	684	173	355	1,622	657	120	737
20-64	2,662	1,660	3,072	21,193	3,904	1,049	6,749
15-19	117	65	87	369	25	24	127
5-14	26	140	223	468	32	43	308
0-4	53	150	334	1,234	55	68	543
No. Residences	3,203	1,145	2,403	18,029	3,486	731	5,686
Residential Vacancy Rate	7.9%	4.2%	5.1%	8.5%	4.5%	4.9%	7.9%
Median Household Income^A	\$48,913	\$84,011	\$86,101	\$76,408	\$79,433	\$146,148	\$54,502
Change from 2010 (Before-Tax Levels^{B,3,4,5})	\$28,198	\$38,903	\$17,549	\$19,117	\$16,352	\$40,334	\$12,080

Note: Difference between median household incomes in 2015 and 2010 not adjusted for inflation. Numbers have been rounded.

A: Source - 2016 Federal Census. Indicates before-tax income in 2015 dollars

B: Indicates before-tax income in 2010 dollars

Source: EY calculations.

Key Message: The RDR has the potential to transform an underutilized portion of the city of Calgary as well as have impacts on the surrounding areas.

³ City of Calgary. "Census by Community 2018." Calgary Civic Census, 2018. <<https://data.calgary.ca/browse?category=Demographics&sortBy=newest&tags=census>>

⁴ Statistics Canada. "2016 Federal Census."

⁵ City of Calgary. "Community profiles." < <http://www.calgary.ca/CSPS/CNS/Pages/Research-and-strategy/Community-profiles/Community-Profiles.aspx>>



3. Rivers District Revitalization

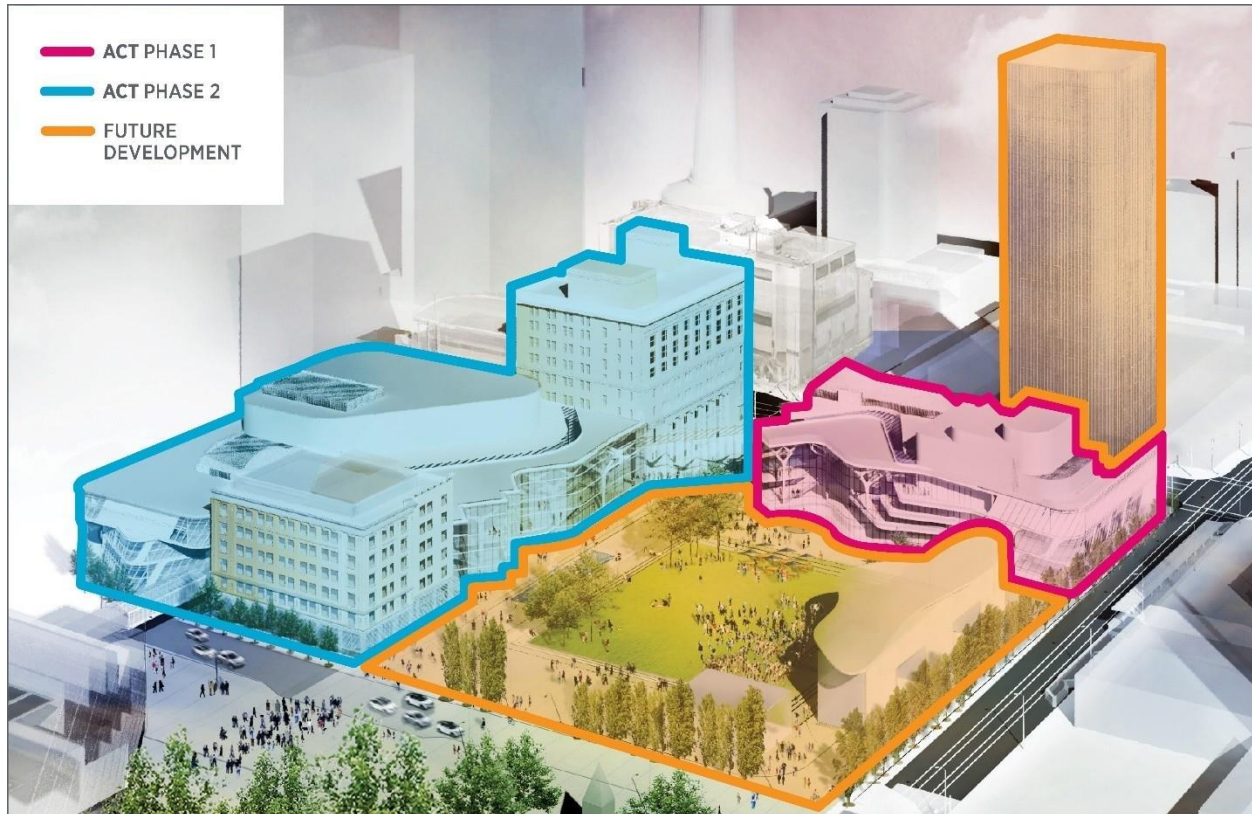
The RDMP is a proposed mixed-use development project located in the east Victoria Park region of downtown Calgary. The plan outlines the development of 4,000,000 sq. ft. of mixed-use development space, with the intention of attracting over 8,000 new residents to the area. CMLC envisions this space as a vibrant, high-density, mixed-use community that attracts tourists from across the globe, and establishes Calgary as a premier destination for arts, culture, and entertainment. The Rivers District Revitalization includes three mega-projects with these being: the expansion and renovation of Arts Commons; the expansion of the BMO Centre; and the construction of a new Event Centre. Note that the projects are listed alphabetically and the order does not indicate prioritization or importance.

3.1. Arts Commons Expansion

Arts Commons (“AC”) currently serves as the arts and cultural hub for the city of Calgary. Today, it includes a collection of performance spaces, rehearsal halls, theatre workshops, offices, meetings rooms as well as a café and display areas for art work. As the home of six resident organizations (including Alberta Theatre Projects, Arts Commons Presents, Calgary Philharmonic Orchestra, Downstage, One Yellow Rabbit and Theatre Calgary) that promote the arts, it provides a much-needed space to foster creative expression in Calgary. The expansion and renovation of Arts Commons will be carried out in two phases. The first phase will convert approximately 440,000 sq. ft. of land into cultural space designed to house three mixed-use venues: a 1,200-seat proscenium theatre; a 350-seat black box theatre; and a smaller 100-seat black box theatre. The second phase of the project will involve renovating the existing 33-year-old AC structure into a modern space for arts and community events.



Figure 2: Rendering of the proposed Arts Commons Expansion



The transformed Arts Commons will also include an active park space inside Olympic Plaza, a residential complex, and a parkade. The space will be designed to accommodate the diverse needs of a world-class city, and align both Calgary's and Alberta's long-term strategic objective to build a culturally vibrant and healthy community.

3.2. BMO Convention Centre Expansion

The BMO Centre today is Calgary's largest convention and exhibition space with approximately 270,000 sq. ft. of rentable space - 250,000 sq. ft. of which is classified as exhibition space. It is a Tier 2 convention facility by Canadian standards. The BMO Centre today is primarily associated with consumer shows and is not considered as an ideal venue for many other business-related events due to a lack of meeting and breakout space, these being drivers for out of town meetings and conventions. The BMO Centre's exhibit space utilization is greater than 70% therefore not allowing for larger meetings and conventions to choose Calgary as their destination. (A utilization rate this high is considered to be at maximum capacity by industry norms.)



Figure 3: Exterior of the BMO Convention Centre today



The BMO Centre expansion project calls for the expansion of the BMO Convention Centre to become a Tier 1 facility that can compete with Toronto, Montreal and Vancouver for large meetings and conventions. By adding over 500,000 sq. ft. the BMO Centre will almost double in size. In addition to the expansion, it is also expected that there will be construction of a new hotel in the vicinity to accommodate the new visitors.

3.3. New Event Centre

The third major project includes the construction of a new Event Centre to replace the aging Scotiabank Saddledome. The Event Centre would have the capacity to seat approximately 18,000 people, and would cover approximately 600,000 sq. ft. More than just a hockey arena, the Event Centre would be used for sporting events, concerts, and other forms of entertainment and is designed to interact with the public space surrounding it to create a community space open to all citizens, regardless of their attendance at hockey games. Furthermore, the Event Centre would support an active Festival Street, retail at street-level and dynamic programming around it to become part of the new culture and entertainment district.



Figure 4: Rendering of the proposed Event Centre



In addition to the major projects outlined above, the RDMP also calls for other notable developments, including:

- **Retail/Commercial Space:** Over the approximated 20-year revitalization period, the potential space created by new developments within east Victoria Park would have the capacity to accommodate over 150,000 sq. ft. of new retail and commercial space. This would include coffee shops, clothing stores, hotels, and more.
- **Residential Space:** The planned developments for the Rivers District have the potential to accommodate approximately 4 million sq. ft. of residential space. This would include the construction of enough residential units to accommodate up to 8,000 residents.
- **Stampede Trail & 17th Avenue Promenade:** Building on the culture of the 10-day event, Stampede Trail will become a place for local and independent retailers to thrive while also serving as a designated festival street that can be closed to vehicular traffic when required. A 17th Avenue connection will be built to improve the connectivity between Calgary's exciting Beltline communities and the proposed cultural and entertainment district. Improving access for pedestrians as well as those taking transit will increase the walkability and connectivity of Calgary's downtown.
- **Public Space Development:** The RDMP outlines how an integrated open space plan is delivered within the community to create a variety of spaces and places of different sizes and scales that integrate with pedestrian streets, lanes, plazas and parks. It is designed to link existing neighbourhoods along with existing and future entertainment destinations. The future Green



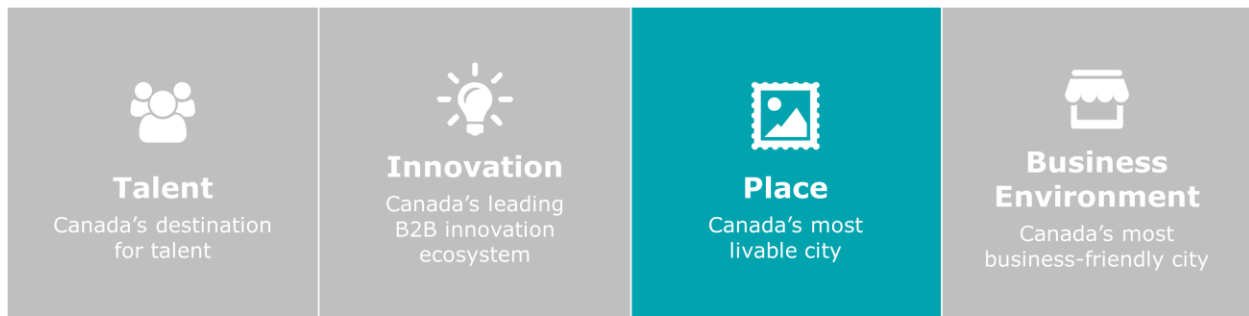
Line LRT station will anchor the north boundary of the district between 4th and 5th Street SE and provide an important transit connection to the area.

- **5th Street Underpass:** The RDMP examines the critical connections necessary to reconnect the district into its surrounding neighbours and ensure that as development progresses, access for pedestrians, cyclists and vehicles meets the needs of a growing community. The 5th Street Underpass will provide a critical north - south connection into east Victoria Park while also allowing for the establishment of the Festival Street along 4th Street SE.

3.4. Alignment with Calgary’s Economic Strategy

In 2018, city Council adopted “Calgary in the New Economy”, the economic strategy for Calgary. The strategy identified four key areas of focus (Talent, Innovation, Place and Business Environment) targeted at turning the city’s vision for the future economy into reality: “Calgary is the city of choice in Canada for the world’s best entrepreneurs. We embrace innovation and create solutions to meet the world’s needs in food, health, energy and transportation.”

Figure 5: Focus Areas for Calgary’s Economic Strategy



The RDR has the potential to be a key catalyst to delivering the “Place” element of the strategy, the mandate of which is *“Making Calgary Canada’s most livable city”*. The key initiatives outlined in the strategy are to:

- Accelerate urbanization and connectivity in the Core;
- Expand and enhance tourism, cultural and recreational assets; and
- Actively support diversity and inclusion

The overarching goal of this focus area is to make Calgary a more attractive place to live, work and play which should result in the city, and downtown, being able to attract new employers, young professionals and top talent as well as enticing organizations already here to grow and expand locally. Today, the perception of Calgary is that cultural and arts experiences are limited, and individuals for whom these experiences are a priority, may feel the need to leave the city to find them. The RDR presents an opportunity to change this perception by developing a strong arts, culture and entertainment district to improve the citizen experience. Additionally, the area would also create a central focal point that will help attract tourists to the city.



Key Message: The RDR is a proposed mix-use development project located in the east Victoria Park region of Calgary. The master plan outlines development of 4,000,000 sq. ft. of mixed-use space, with the intention of attracting over 8,000 new residents to the area. It is directly supportive of enhancing the “Place” component of Calgary’s economic strategy.



4. Description and Methodology of an EIA

4.1. Assessing Economic Impacts

An economic impact assessment (“EIA”) is a tool that economists use to quantify the effects of a certain event on the level of activity within a given area. EIAs estimate the impacts of these events on key, economic indicators and categorize them into the three distinct categories of *direct economic impacts*, *indirect economic impacts*, and *induced economic impacts* (defined in section 4.2 below).






This EIA for the Rivers District Revitalization examines the economic footprint associated with the current and projected capital and operational activities of the three major projects. The assessment will estimate the impacts on the following economic indicators (defined in section 4.4 below):

- GDP (or local value added);
- Labour income;
- Employment
- Output

To estimate these impacts, EY used a successful and proven methodology based on sound economic principles. This approach has been carefully considered and customized to the unique needs of the Rivers District Revitalization, and employs a methodology that will enable comparisons to other EIAs. An overview of the approach and additional details are outlined below, however, it is important to note that some of the steps are conducted in a parallel or overlapping fashion and are not necessarily sequential.





Step	Description
 <p data-bbox="224 527 354 590">Review of Literature</p>	<p data-bbox="394 405 1385 499">Performed a detailed review of the existing literature from industry, government, and academic sources. The review included developing an understanding of economic outcomes of several types of investments relevant to the RDR including:</p> <ul data-bbox="443 501 1227 596" style="list-style-type: none"> <li data-bbox="443 501 805 531">• Community revitalization; <li data-bbox="443 533 1032 562">• Development of mixed-use communities; and <li data-bbox="443 564 1227 596">• Construction of mega-projects as a catalyst for development.
 <p data-bbox="212 800 365 894">Review of Background Material</p>	<p data-bbox="394 627 1414 722">Obtained background data on the proposed investments in the RDR, including capital and operational expenditures for the projects to determine the local economic impacts to the city of Calgary. This data and information provides the basis for:</p> <ul data-bbox="443 724 1403 879" style="list-style-type: none"> <li data-bbox="443 724 1377 785">• Evaluating the landscape of the Rivers District, including area information and usage of potential facilities; <li data-bbox="443 787 1386 816">• Assessing the current and future economic state of the Rivers District; and <li data-bbox="443 819 1403 879">• Developing the economic model to determine impacts of the investments on GDP, employment, labour income, and output. <p data-bbox="394 882 1385 942">Note: EY signed a non-disclosure agreement (NDA) and therefore details of capital and operating expenditures for the facilities are not shared within this report.</p>
 <p data-bbox="224 1167 354 1262">Model Economic Impacts</p>	<p data-bbox="394 978 1403 1073">Using data gathered in the previous step, employed Statistic Canada’s provincial 2014 Input-Output (“I-O”) Model to assess direct and indirect impacts of the RDR on Calgary’s economy including effects on:</p> <ul data-bbox="443 1075 675 1203" style="list-style-type: none"> <li data-bbox="443 1075 545 1104">• GDP <li data-bbox="443 1106 675 1136">• Labour income <li data-bbox="443 1138 646 1167">• Job creation <li data-bbox="443 1169 578 1203">• Output <p data-bbox="394 1205 1393 1266">This information was also supplemented with an in-depth qualitative analysis based on the current (and projected) landscape of the city of Calgary.</p> <p data-bbox="394 1268 1378 1329">Note: For reasons described in section 4.3, our analysis excludes induced impacts associated with the RDR.</p>
 <p data-bbox="207 1562 370 1656">Analyze Comparative Jurisdictions</p>	<p data-bbox="394 1371 1398 1432">Developed criteria to identify comparator jurisdictions that underwent, or are in the process of, constructing developments like the RDR to understand potential:</p> <ul data-bbox="443 1434 1321 1562" style="list-style-type: none"> <li data-bbox="443 1434 1357 1495">• Changes in economic activity and effects on indicators like employment, median income and wages, property values etc.; <li data-bbox="443 1497 1317 1526">• Further redevelopment opportunities and follow on investments; and <li data-bbox="443 1528 907 1562">• Impact on the branding of the city. <p data-bbox="394 1564 1081 1593">After thorough analysis, final selected jurisdictions were:</p> <ul data-bbox="443 1596 881 1724" style="list-style-type: none"> <li data-bbox="443 1596 797 1625">• ICE District in Edmonton; <li data-bbox="443 1627 821 1656">• Arena District in Columbus; <li data-bbox="443 1659 881 1688">• Nashville Yards in Nashville; and <li data-bbox="443 1690 786 1724">• Union Station in Denver.
 <p data-bbox="215 1871 357 1925">Summarize Results</p>	<p data-bbox="394 1824 1305 1854">Develop a comprehensive report detailing the impacts of the proposed RDR.</p>



4.2. Approach for Detailed Literature Review

As an initial step to the assessment, EY conducted a thorough review of existing academic and industry research to inform three important areas of analysis relevant to the Rivers District Revitalization:

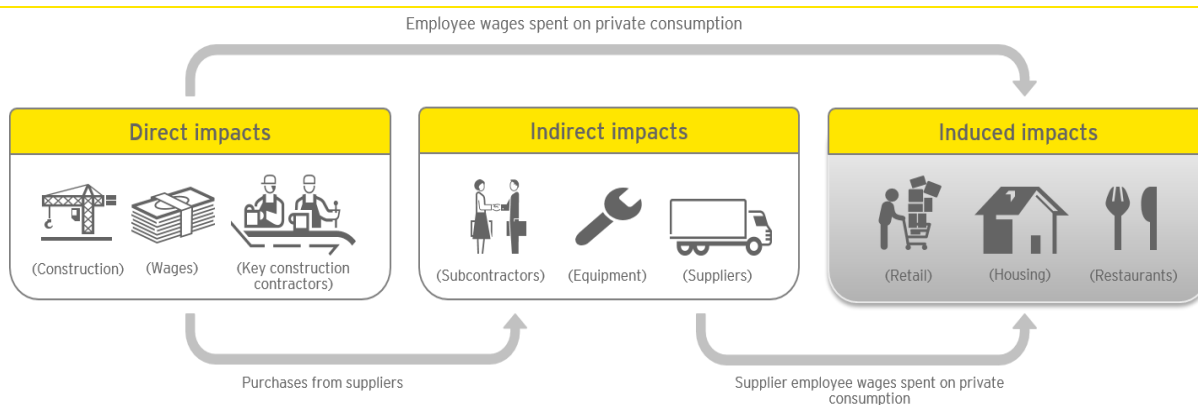
- **Critiques and limitations of the I-O, and other, economic models:** Research on this topic informed several adjustments to the specific methodology used to estimate the economic impacts e.g. the risk of overstating impacts due to the inclusion of induced impacts (refer to section 4.3).
- **Value of mixed-use developments:** Research on this topic heavily informed considerations used in conducting the qualitative analysis including spillover effects.
- **Outcomes from other community revitalization projects:** Research on this topic informed both the qualitative analysis, as well as the jurisdictional analysis.

In addition to references to research that are included throughout this report, a summary is included in section 7.

4.3. Definitions of Direct, Indirect, and Induced Impacts

Although EIAs can use any one of several models, for the purposes of the Rivers District Revitalization, EY determined that Statistics Canada’s Input-Output model was most appropriate as it is able to balance economic rigour with easily understood outputs. This framework categorizes the effects of an event, the three mega-projects in this case, into three distinct types of impacts: *direct*, *indirect*, and *induced* impacts. These impacts individually, as well as collectively, represent how the activities within the District ripple throughout the economy (see Figure 6).

Figure 6: Direct, Indirect and Induced Impacts of the Rivers District Revitalization



Source: EY illustration.

Before reviewing details of the I-O methodology, it is important to understand the definitions of each of these types of impacts:



- *Direct impact* includes the economic impact supported directly by the proposed capital investment costs and post-construction operation costs. This represents the value-added to Calgary's economy as a direct result of the capital spending on new and existing facilities as well as operational expenditures.
- *Indirect impact* includes the economic impact from business activities supporting the business operations of the Rivers District Revitalization. The indirect impacts include, among other things, the impacts from suppliers' spending when purchasing goods and services from other suppliers in the area. For the Rivers District, this includes the expenditures by general contractors on goods and services such as lumber, equipment, and general labour.
- *Induced impact* includes the economic impact that occurs when employees that benefit from the economic activity in the Rivers District (including those directly employed) spend their incomes on goods and services throughout the Calgary economy. The induced activities are assumed to be primarily in service or consumer-related industries such as retail, transportation, accommodation, restaurants, housing and finance. The jobs and income that result from these consumer expenditures are also considered induced impacts. Induced impacts can be estimated based on any number of rounds or iterations of recycling income into increased spending, economic activity, and additional income. Induced impacts are often estimated based on infinite iterations of these activities (closed model) and as a result, can overstate the magnitude of economic impacts, especially when the assumptions made in the model are not realized e.g. if a significant amount of the additional income is not spent in the region then the positive bias is amplified with every iteration. Although induced impacts are real economic impacts, they can be difficult to quantify and their inclusion can potentially overstate the overall impact of an event. **Therefore, in line with the conservative approach adopted for this EIA, induced economic impacts have been excluded from consideration.**

4.4. Methodology for Measuring Economic Impacts

To analyse the economic impacts for both the capital investments and post-construction operating costs associated with the River District Revitalization, we performed a comprehensive EIA using data provided by key stakeholders (i.e., Arts Commons, CADA, CED, CMLC, CSEC, and Stampede), publicly available data, Statistics Canada, and combined these with our own proprietary EY economic model tools (i.e., economic models founded on the principles of Statistics Canada's Input-Output Model). As such, our analysis will allow us to capture the direct and indirect economic impacts of the Rivers District Revitalization on the city of Calgary.

For the purposes of this EIA, Statistics Canada's Input-Output ("I-O") model was selected. The I-O model uses economic multipliers specific to provinces and regions to translate the direct impacts of capital and operational expenditures into indirect impacts, which will collectively define the total estimated economic impact of the RDR. We will express the economic impacts in terms of the following economic indicators:

- **Full-time equivalent employment ("FTEs"):** This refers to the total number of employee jobs that are converted to full-time equivalence based on the overall average full-time hours worked in either a business or government sector. Note here that this measure does not account for those who are self-employed. This is a better estimate as it does not overstate or understate the



number of jobs created. Further, the FTE job metric is measured in “person-years”, as in the number of hours needed for individuals to work in order to be classified as such.

- **Wages or labour income:** A component of the local value-added that measures the total employee compensation (value of wages and benefits) and proprietor income.
- **Gross Domestic Product (“GDP”):** GDP, or local value added, is a measure of the value of all final goods and services produced in a specific region (i.e. the city of Calgary).
- **Gross Output:** The total economic activity of new goods and services within the City of Calgary.

It is important to note that these impacts are all expressed in gross terms, as opposed to net. Whereas net impacts would indicate the incremental value of new construction, gross impacts indicate the total value of the capital and operational expenditures including the impact of current operations.

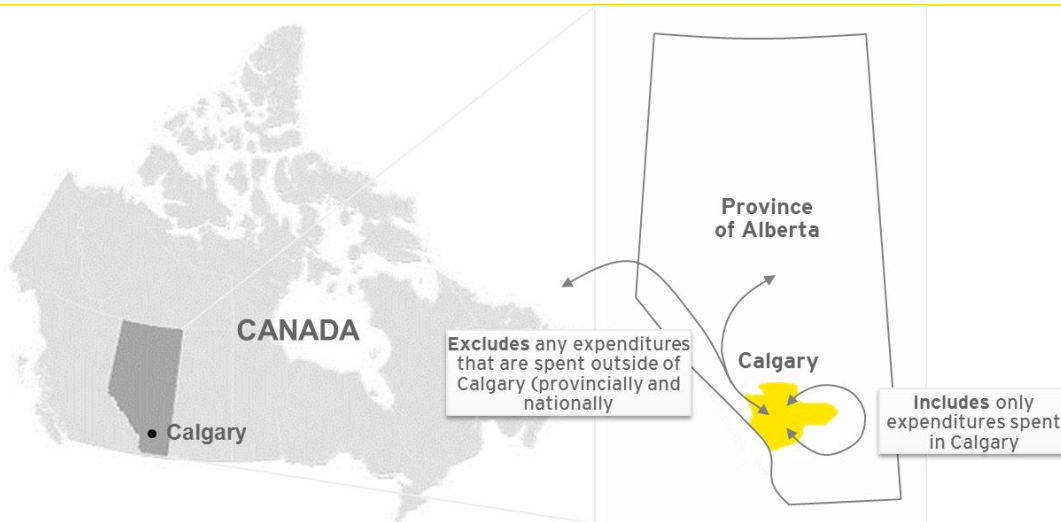
To estimate the total economic impact of the RDR, we rely on using Statistics Canada’s most recent 2014 economic multipliers that reflect the proposed construction and expansion of the three facilities. These multipliers reflect how Statistics Canada tracks the interdependency between different sectors in the economy. Each of these multipliers is a number that describes the size of the total economic impact for a given level of spending. For example, a multiplier of 1.2 suggests that the total economic impact for every dollar spent on the Rivers District Revitalization adds an additional 20 cents to the economy. In other words, for every dollar spent, the economic activity from supporting businesses and consumers generates an additional 20 cents for the local economy. Statistics Canada’s I-O model is used by both public and private sector organizations as well as researchers, and is based on a widely accepted methodology for estimating these types of economic linkages. Please refer to Appendix A.1 for a more detailed description of the I-O model and its underlying assumptions and restrictions.

4.5. Adjustments

To assess the RDR’s economic impact, we adjust the estimated capital and operating costs to only include those that are specific to the city of Calgary and represent value-added to the local economy. The Statistics Canada Input-Output model used for this analysis is constructed only for the national and provincial economies, but not for sub-regions. Thus, an adjustment must be made to estimate regional impacts to the city of Calgary. Here, we separate expenditures that are locally sourced versus those that are sourced from outside the city of Calgary (e.g. how much of the labour costs are paid to employees residing in Calgary compared to outside, and what proportion of the expenditures are spent on purchases of goods and services located in Calgary compared to outside of Calgary - Figure 7 below). This distinction between local and external expenditure is critical for the size of the directional impact analysis and must be considered when assessing the direct and indirect impacts. An example of this is line items associated with purchases from retail or wholesale suppliers that would not be fully realized within the city of Calgary, as a large percentage would be sourced from outside of the city.



Figure 7: Adjusting Impacts only to Consider Regional Effects



Source: EY illustration.

More specifically, we would adjust the impacts to consider, among other things, the following:

- Businesses supporting the operations of the facilities (i.e. Arts Commons, the BMO Centre and the Event Centre) within the Rivers District that are located outside of the city of Calgary.
- Wages and salaries paid to employees of the facilities within the Rivers District that may not reside within the city of Calgary, and are likely to spend their labour incomes outside the city's boundaries.
- Expenditures paid to general contractors hired during the construction phases of the RDR that are not located within the city of Calgary.

These adjustments are made by considering the traded or local nature of the industries in the Statistics Canada I-O model and the city's relative specialization in each industry. Relative specialization is assessed by calculating the ratio of employment of a certain sector in Calgary to the total employment of that same sector in the province. This provides a reasonable proxy to assess the concentration of sectors within Calgary and adjust the total economic impacts for each industry that is likely affected from the operations of the RDR. Given that the I-O model provides a detailed description of which industries are predicted to be impacted from the collective expenditures of the RDR, we would then be able to adjust each industry individually based on the concentration of sectors within the city of Calgary. This would provide adjusted indirect impacts specific to the city.



4.6. Boundaries

When carrying out any EIA, it is important to clearly define the geographical scope of the area of interest. In this case, the area of consideration is the jurisdiction in which the activity or project is taking place, which could be at the neighbourhood, city, provincial, or national level. This is to ensure that the area of direct influence is captured to properly account for those individuals and groups that are directly affected. It is also important to properly define the geographical scope of the analysis so that the distributional impacts on surrounding areas can be properly assessed. This ensures that both qualitative and quantitative benefits and consequences to these regions are considered. For the purposes of this EIA, boundaries used were those defined by the developing organization within their own materials and literature.

4.7. Limitations of Economic Impact Assessments

While the I-O methodology outlined above is widely accepted for carrying out EIA, it does have shortcomings. Brief descriptions of notable limitations are below, with a more detailed description provided in Appendix A.1:

1. **I-O models assume that there is an unlimited supply of workers available for production.** It does not consider that expanding production in one industry could result in a redistribution of labour as opposed to an increase in employment in another. More specifically, the numbers provided by the I-O model in terms of FTEs may not necessarily imply an incremental change in total workers, but rather an upper limit as to what is expected.
2. **I-O models do not take into consideration the alternative uses or opportunity costs associated with allocating funds towards one project vs. another.** For example, in the case of the RDR, public funds allocated towards the construction of Arts Commons, the BMO Centre or the Event Centre could go towards other uses. Allocating these funds towards alternative areas will produce their own economic impacts, which could be larger or smaller than the outcomes from the RDR. Moreover, there is a cost associated with raising funds through public means that is not considered in economic impact analyses. In general, the analysis does not adjust for or separate expenditures by private or public funding.
3. **Results from the model should not be interpreted as causal,** meaning that the numbers produced by the I-O model may not be solely attributable to the RDR. Assume for instance that the I-O model revealed that because of the capital and operational expenditures associated with the RDR, X amount jobs would be created. In this case, we cannot assume that all X jobs would be a result of these expenditures. It could be the case that general contractors hired to construct portions of the project added additional workers to address potential labour shortage issues, and that it just so happened to coincide with the period in which the revitalization was occurring.
4. **The model assumes that all spending will generate positive impacts.** In this case, all multipliers in the model are greater than zero, suggesting that any level of spending will generate positive economic impacts, which is not the case in all circumstances. Some studies have shown that



when accounting for macroeconomic shocks, the indirect impacts from government spending have been negative in the long run.⁶

5. **The I-O model assumes constant returns to scale**, meaning that an increase of X in inputs should lead to the same X increase in output. More formally, an increase in inputs causes the same proportional increase in outputs. For instance, if a manufacturing plant increases its labour force by say 10 units, then the output produced by that facility will also increase by 10 units. More intuitively, the ratio of inputs and outputs is always equal to 1.
6. **The model does not account for substitution amongst inputs**, and that each industry in the model is regarded as having a single static production process. Further, the model does not account for any technology shocks that may occur, or consider that businesses likely become more efficient over time.
7. **The impact of visitors and tourism is not considered**. In this case, the I-O model used to carry out our analysis does not account for the impacts associated with both the number and spending propensities of visitors to the Rivers District. As a result, the economic impacts may be understated.

Another important point to note is the difference between an EIA and a cost-benefit analysis (“CBA”). A CBA is based on the principles of welfare economics, and is an economic efficiency model that measures the economic advantages and disadvantages of an event or policy by assessing its cost and benefits to calculate net changes in welfare. In other words, it identifies net benefits (i.e. benefits less costs) for relevant stakeholders by disaggregating inputs of an EIA (i.e. capital and operational expenditures) into categories of costs and benefits. As an example, in a CBA, wages paid to workers for the Arts Commons, BMO Centre and Event Centre would be treated as a benefit for the individual worker, but also as a cost for each of the businesses. In contrast, an EIA would treat these wages as simply an input within the model, without differentiating between costs and benefits. Additionally, unlike EIAs, CBAs also account for opportunity costs, and explicitly comparing the “status quo” baseline scenario to evaluate incremental changes. CBAs look at the broader question of societal gains and losses due to a policy or project, while an EIA looks only at economic benefits. Further, EIAs are based on the concept of multiplier analysis, and as mentioned previously, are carried out using standard I-O modelling. EIAs examine the effect of an event or project on the economy within a specified area, and typically measure changes in key indicators such as jobs, labour income, GDP and gross output.

Key Message: EY followed a proven methodology for the EIA using Statistics Canada’s Input-Output model and evaluated direct and indirect impacts. Economic impacts are expressed in terms of FTE employment, labour income, GDP and output. The model has taken a conservative approach as it does not include induced impacts.

⁶ Grandy, P., & Muller, R.A. “On the Use and Misuse of Input-Output Based Impact Analysis in Evaluation.” *The Canadian Journal of Program Evaluation*, 3, no.2 (1988): 49-61.



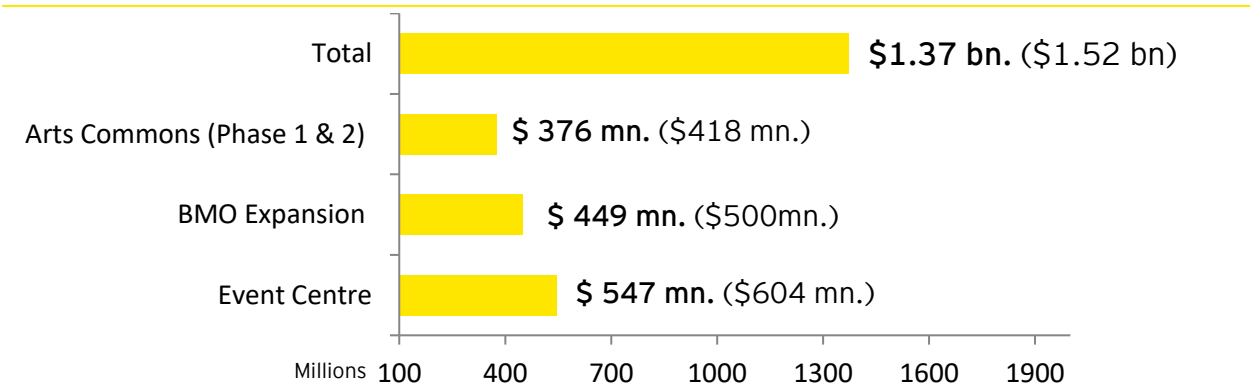
5. Overview of Inputs into the I-O Model

Statistics Canada’s Input-Output model uses economic multipliers specific to provinces and regions to understand the direct and indirect impacts of specific inputs into the area. For the Rivers District Revitalization, the inputs under consideration are the capital and operating expenditures associated with the major projects within the district including both phases of Arts Commons, the expansion of the BMO Convention Centre, and construction of the Event Centre. Details of these inputs as they were provided for the purposes of this report are provided below and may be subject to revision if construction plans are changed.

5.1. Capital Expenditures of the Rivers District Revitalization

Over the entire lifecycle of the three projects, estimated capital expenditures are more than CAD \$1.37 billion and are similar in magnitude to analogous projects (for the development of entertainment districts) that have been or are in the process of being constructed. For an overview of the estimated capital expenditures associated with these projects, please refer to Figure 8 below. **Note that dollar values shown below are those used in the economic model and were normalized to 2017 dollars. Nominal dollar values, which match the publicly released figures for the projects, are listed in brackets.**

Figure 8: Major Project Capital Expenditures in 2017 Real \$ (Nominal \$ in brackets)



Note: Total capital expenditures have been rounded and are based on information provided to EY by key stakeholders. Bn. stands for billions and mn. stands for millions. Numbers are reported in 2017 dollars. Capital expenditures include hard-costs, soft-costs, and other related capital expenditures.

Source: EY calculations.

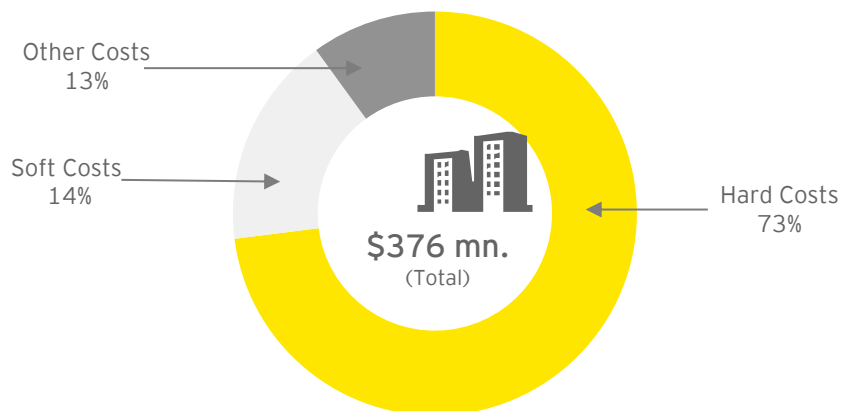


The expenditures outlined above can be broken down into:

- **Hard-costs:** any construction related expenditures for labour, material and general contracting;
- **Soft-costs:** payments towards consultants for architectural design, engineering, geotechnical, or other related services; and
- **Other-costs:** reflect expenditures on project contingencies, administrative work associated with the construction of the project, equipment expenditures, etc.

For both phases of Arts Commons, 73% of the total capital expenditures are for hard-costs, 14% are related to soft-costs, and the remaining 13% is attributable to other capital costs (See Figure 9 below).

Figure 9: Breakdown of Capital Expenditures by Type of Cost for Arts Commons



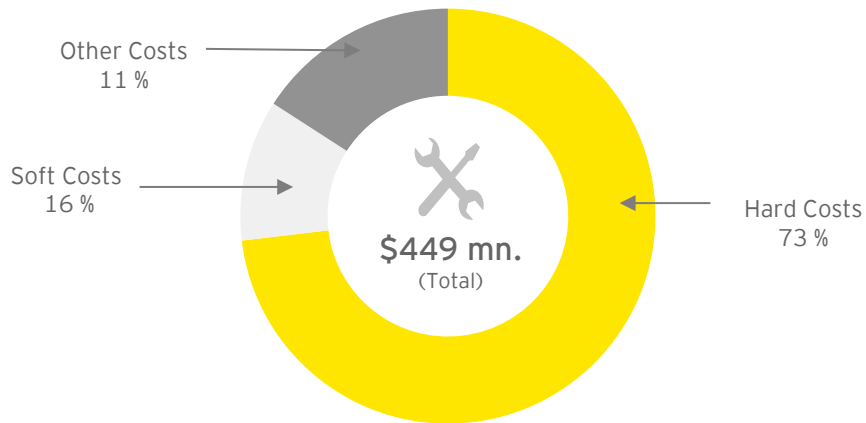
Note: Percentages have been rounded and are based on data provided by key stakeholders. mn. represented millions. Numbers are reported in 2017 dollars. Accounts for both phase 1 and phase 2 capital expenditures.

Source: EY calculations.



For the BMO Centre expansion, 73% of the total capital expenditures are hard-cost related, 16% are soft-cost related, and the remaining 11% are associated with other capital related costs. (See Figure 10 below).

Figure 10: Breakdown of BMO Centre Expansion Capital Expenditures by Type of Cost

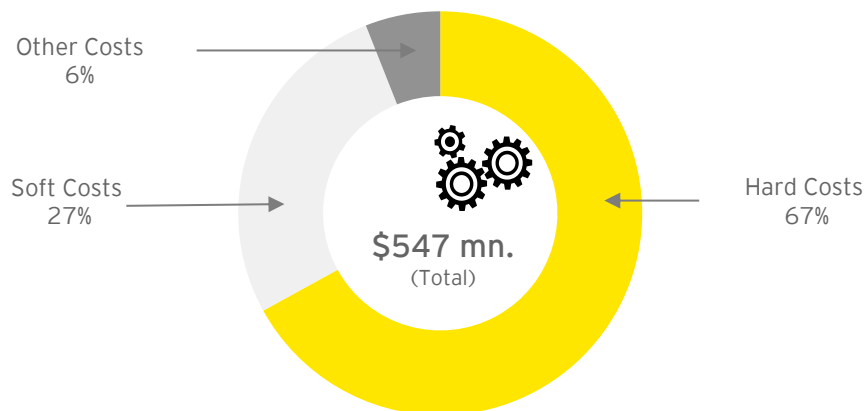


Note: Percentages have been rounded and are based on data provided by key stakeholders. mn. represented millions. Numbers reported in 2017 dollars.

Source: EY calculations.

For the Event Centre, of the approximate CAD \$547 million in capital expenditures, 67% of these are hard related costs, 27% are soft related costs, and the remaining 6% are allocated to other-costs (see Figure 11 below).

Figure 11: Breakdown of Event Centre Capital Expenditures by Type of Cost



Note: Percentages have been rounded and are based on data provided by third party groups. mn. represented millions. Numbers reported in 2017 dollars.

Source: EY calculations.



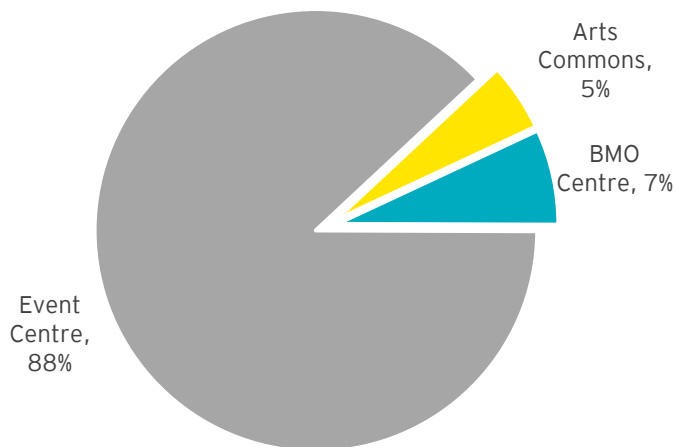
5.2. Operational Expenditures of the Rivers District Revitalization

Beyond capital investments required to construct these projects, there are also substantial costs associated with operating them. Operating expenditures refer to the day-to-day maintenance and administrative costs of running a business such as accounting and legal fees, bank charges, wages and salaries, travel expenses, office supply costs, rent, utility expenses, repair and maintenance costs, etc. Operating expenditures can be categorized into three distinct groups:

- **Fixed Costs:** costs that do not change over time, and must be paid regardless of the businesses activities or performance. An example of this would be rent paid for a manufacturing facility where, regardless of company production or earnings, this must still be paid. Other examples of fixed costs include overhead costs, insurance, and equipment costs.
- **Variable Costs:** costs that vary (i.e., change) over time with production. The relationship between variable costs and production are positively correlated with one another, indicating that as production increases so too do these costs. Examples of variable costs include raw material costs, payroll, utilities, etc.
- **“Semi-Variable” or “Semi-Fixed” Costs:** costs that have criteria that satisfy both variable and fixed costs. These costs vary in part with increases or decreases in production, but still exist when production is zero.

The economic model uses forecasted operating expenditures for each of the three facilities from 2024-2028 because it is assumed that all three facilities will be operational by 2024. Of the total operating expenditures for this period, it is assumed that 5% will come from Arts Commons, 7% of these are from the BMO Centre and the remaining 88% will be from the Event Centre. Figure 12 outlines the average percentage of total operating expenditures forecasted for each facility.

Figure 12: Forecasted Percentage of Total OPEX by Project (2024-2028)



Note: Percentages have been rounded and were derived using data provided by key stakeholders and assumptions made by EY.

Source: EY calculations.



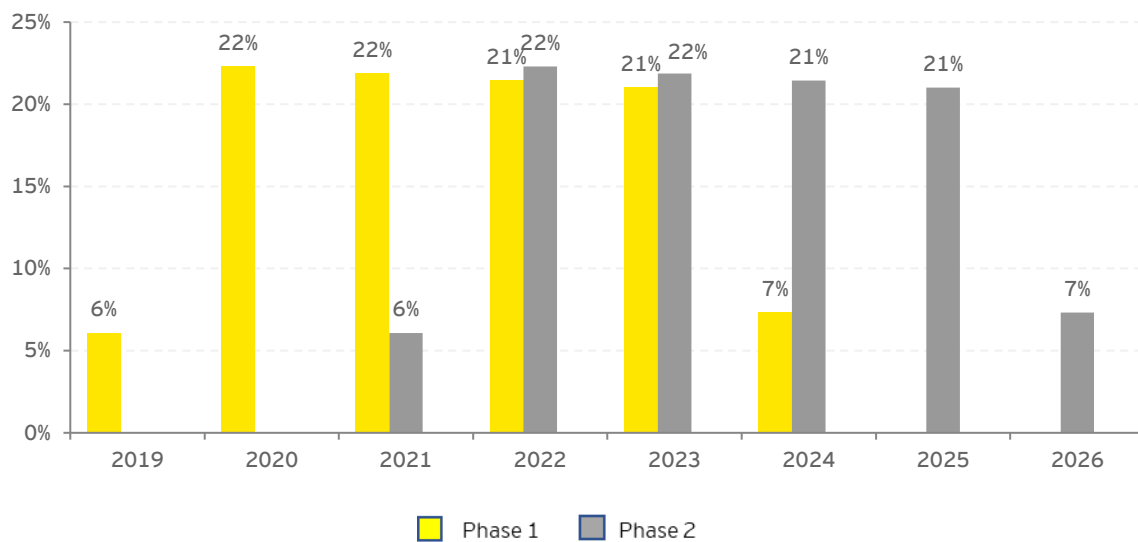
To protect sensitive data related to operational expenditures for the key stakeholders, additional line item details are not included in this report, and the model results have been included in aggregate for the three projects.

5.3. Timeline of District Renovations and Expenditures

The projects planned for the Rivers District Revitalization are assumed to be completed over a six-year period, beginning in 2019 and ending in 2026.

Phase 1 of the Arts Commons expansion project is set to begin in 2019, and is expected to be completed by 2024. Similarly, phase 2 of the project will begin in 2021, and is expected to be completed by 2026. Using data obtained from key stakeholders, as well as careful considerations and assumptions made by EY, for both phases, 6% of the funds delegated to construction will be used in year 1, while 22% will be used in years 2 and 3, 21% would be used in years 4 and 5. Finally, the remaining 7% of these costs will be used in the final year of construction (See Figure 13 below). A breakdown of the Arts Commons project lifecycle by dollar amounts is also presented (see Figure 14 below).

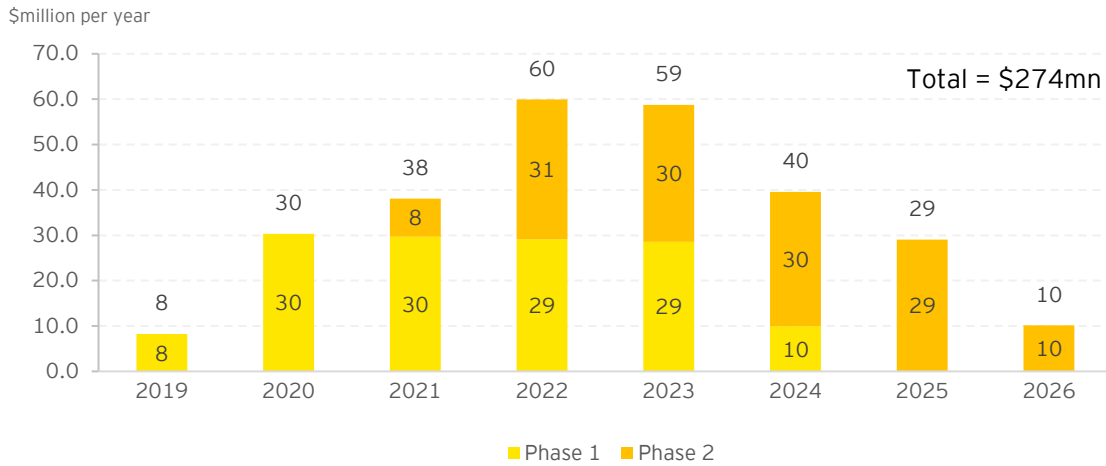
Figure 13: Percentage Breakdown of Arts Commons Construction Life Cycle



Note: Percentages have been rounded and were derived using data provided by key stakeholders and assumptions made by EY.
Source: EY calculations.



Figure 14. Dollar Breakdown of Arts Commons Construction Life Cycle

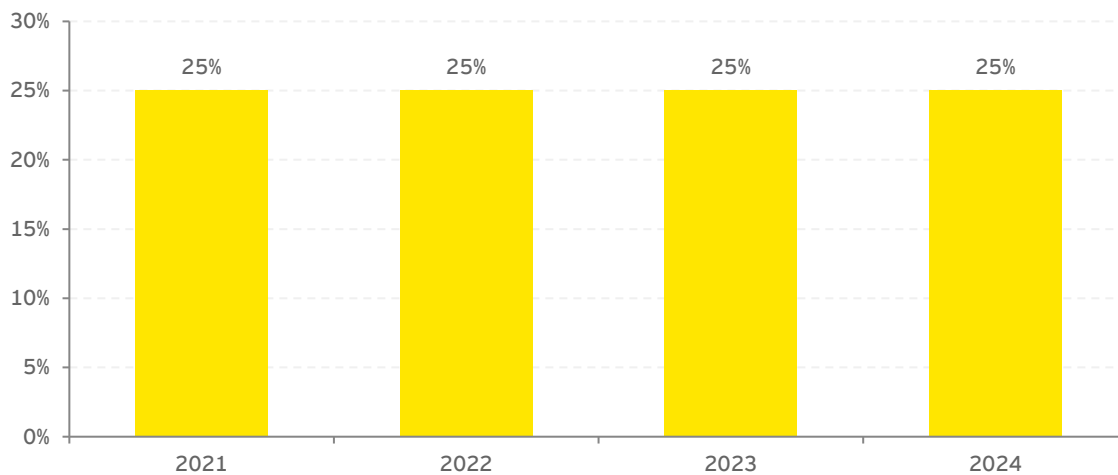


Notes: Numbers have been rounded and only reflect hard related costs. Values were derived using data provided from key stakeholders. Construction costs account for both phase 1 and phase 2. Numbers reported in 2017 dollars. Total hard-cost related to both phases of the arts commons ~CAD \$274 million (~CAD \$136 million for phase 1 and ~CAD 138 million for phase 2).

Source: EY calculations.

For the expansion of the BMO Centre, a portion of the building, known as Hall F, will commence in 2019. However, for the purposes of the economic model and this report, it was assumed that the project would take four years to complete and that 25% of the costs would be spent in each year (See Figure 16 below).

Figure 15. Percentage Breakdown of BMO Centre Expansion Construction Life Cycle

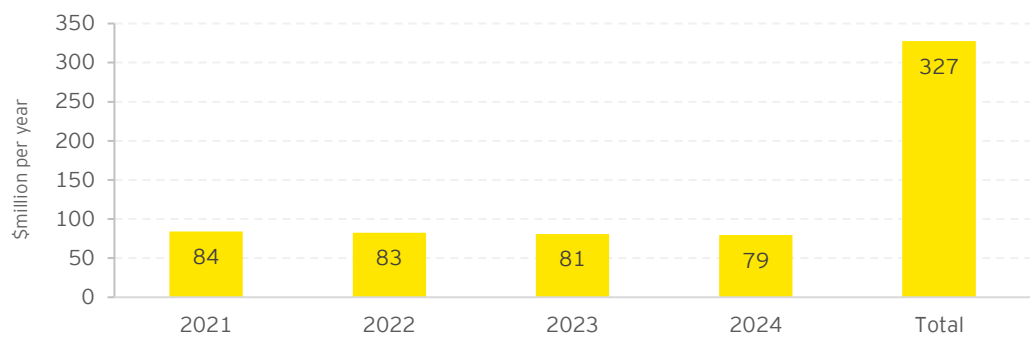


Note: Percentages have been rounded and were derived using data provided by key stakeholders and assumptions made by EY personnel.

Source: EY calculations.



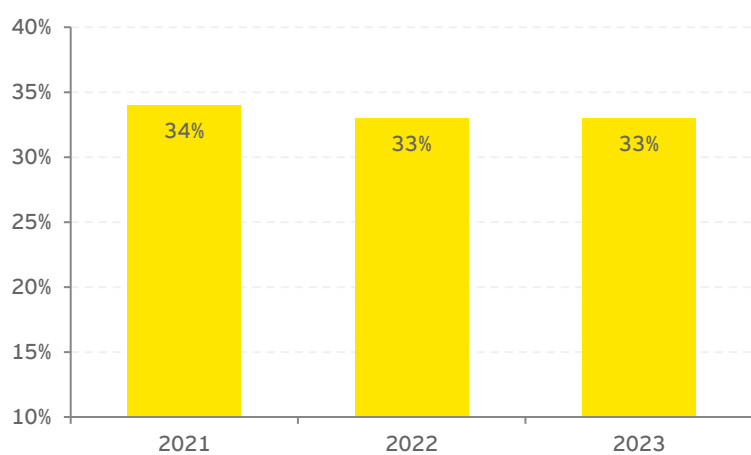
Figure 16. Dollar Breakdown of BMO Centre Expansion Construction Life Cycle



Notes: Numbers have been rounded and only reflect hard related costs. Numbers were derived using data provided by key stakeholders. Numbers reported in 2017 dollars.
Source: EY calculations.

For the construction of the Event Centre, construction was assumed to begin in 2021, and is scheduled to take approximately three years to complete. The life cycle of the construction phase is presented in Figure 17 below. It was assumed that 34% of the construction costs would be accrued in year 1, while 33% of the construction costs would be accrued in years 2 and 3 respectively. The total dollar amounts allocated to each year of construction are shown in Figure 18.

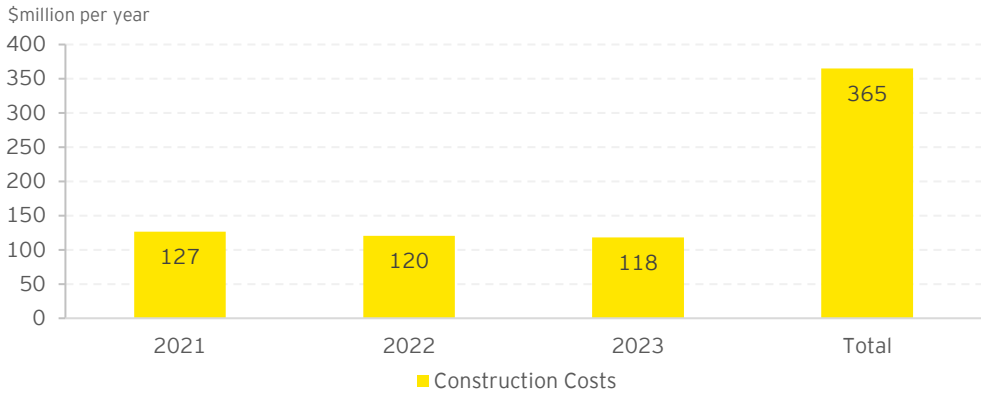
Figure 17. Percentage Breakdown of Event Centre Construction Life Cycle



Note: Percentages have been rounded and were derived using data provided by third party groups and assumptions made by EY personnel.
Source: EY calculations.



Figure 18. Dollar Breakdown of Event Centre Construction Life Cycle



Notes: Numbers have been rounded and only reflect hard related costs. Data provided by third party groups. Numbers reported in 2017 dollars.
Source: EY calculations.

Key Message: *The overall timeframe for completion of the proposed RDR projects is from 2019 - 2026, and the projects require significant operational and capital expenditures over this period. Total capital construction and development costs for the three projects are estimated to be ~\$1.5 bn. (nominal).*







6. Economic Impact Results

This section presents the results from the economic impact assessment based on the adjusted expenditure estimates of the Rivers District Revitalization from Statistic Canada’s I-O model. The impacts related to employment, labour income, GDP and output are presented separately below.

6.1. Operational Expenditure Impacts

The economic impact of the operations of the three major projects are estimated for the year 2024, when construction of the Arts Commons North expansion is expected to be completed and all facilities are operational. For simplicity, Table 3 below summarizes the expected total impacts from the operational expenditure in 2024, which would be expected to be sustained annually, barring any significant changes to operations.

Table 3. Summary of Economic Impacts from Operational Expenditures (Annually, Starting 2024)

Impact	 Person-Year FTEs	 Wages (\$ mn.)	 GDP (\$ mn.)	 Output (\$ mn.)
Total	1,536	161	168	297

Note: Prices are in real 2017 dollars and “mn” refers to units of millions; the figure shows the total impact of the operational expenditure for one year to the city of Calgary.

Source: EY calculations based on expenditure estimates and Statistics Canada’s Input-Output tables.

Based on forecasted operational expenditures, total gross output (direct and indirect) impact from these facilities is estimated to be \$297 million annually from 2024 onwards. The cumulative direct and indirect economic impact on GDP is projected to total \$168 million annually. Based on the local nature of the Arts, Entertainment and Recreation industry, most of the impact on output and GDP is expected to be specific to Calgary. Additional adjustments were made to account for impact leakages to other regions.

The operations of these major projects are estimated to directly or indirectly support and sustain a total of 1,536 full-time equivalent (FTE) jobs annually. The corresponding total annual economic impact on wages and salaries in 2024 and onwards is expected to be approximately \$161 million CAD. However, the number FTE jobs and salary contributions must be interpreted with caution. For instance, it may be that some of the labour specific impacts may capture the dynamic labour market in Calgary of workers moving between jobs, which means that the above estimates cannot be interpreted as net “new” incremental impacts to the city. Additionally, other aspects to consider are that some workers will likely be commuters into the city. The Arts Commons North expansion represents incremental operations in the region, however this additional shock could crowd out impacts from other existing businesses or attract additional workers outside of Calgary if there is not an abundance of labour readily available to be employed. In general, the city of Calgary accounts for 36 percent of the total labour force in the Arts,







Entertainment, and Recreation sector in the province and much of the labour force is within commuting distance.

6.2. Capital Expenditure Impacts

Expansion, renovation, and new construction on the three major projects in the district will span from 2019 to 2026, where most of the capital expenditure is expected to take place between 2021 and 2023. As per section 4.5, certain adjustments were made to, among other things, the sourcing of labour and materials needed to complete various projects of the RDR. Table 4 below summarizes the expected total impacts from the capital investments over the duration of the RDR.

Table 4. Summary of Economic Impacts from Capital Expenditures

Impact	 Person-Year FTEs	 Wages (\$ mn.)	 GDP (\$ mn.)	 Output (\$ mn.)
Total	4,750	413	602	1,701

Note: Prices are in real 2017 dollars and “mn” refers to units of millions; the figure shows the total impact of the capital expenditure to the city of Calgary.

Source: EY calculations based on expenditure estimates and Statistics Canada’s Input-Output tables.

The total impact on gross output from construction is estimated to be \$1,701 million. This includes both the direct impacts on the primary industries impacted as well as additional gross output impacts from purchases and activities of the industries supporting construction activities. However, some of the indirect impact may be overstated due to the double counting of impacts from different industries.

Cumulative direct and indirect impacts on GDP from capital expenditure are projected to total \$602 million. The construction projects are also associated with a total impact of \$413 million in labour income in the city of Calgary. Similarly, the associated impacts on employment are projected to be 4,750 person-year FTE jobs over the 8 years of construction.

It is important to note that the non-residential construction industry and its related suppliers are less likely to be based out of Calgary than the Arts, Entertainment, and Recreation industry. Moreover, Calgary’s labour force in the non-residential construction industry represents 28 percent of the labour force in Alberta and many workers in the industry may likely be sourced from surrounding areas. Assuming all three projects are approved and proceed within the specified timeline, the overlapping construction timelines across the three projects may result in overestimated impact numbers as locally based firms reach production capacity and must source additional workers (and capital) from outside of Calgary. This could cause further double counting due to the activities and hiring practices for each the projects. If this assumption is not met, these considerations may not apply.



Key Message: Based on information obtained through Statistic Canada’s “I-O” Model, the Rivers District Revitalization is projected to have a positive impact on Calgary’s economy. Capital investment during the construction and development phases, as well as the ongoing operational spending after completion are projected to contribute to GDP and output, create jobs and generate labour income. Although there is a certain level of subjectivity in the assumptions used and adjustments made, the conservative approach used in this model makes it likely that the economic footprint of the Rivers District Revitalization will be positive.



7. Literature Review

As stated earlier, research from a variety of sources was conducted to inform several aspects of this EIA. Topics reviewed included community revitalization, the construction and subsidization of sports facilities, as well as the impact of arts, culture and entertainment districts to the greater community. A list of sources examined can be found in the footnotes throughout this report.

The overall conclusion from the literature review appears to indicate mixed results, where some suggest that these developments provide little to no economic return, while others argue that these types of projects can be valuable investments. Generally, a mixed-use development is a project with a combination of retail, office, residential, hotel, or other recreational spaces. For a mixed-use development to be considered “financially feasible”, the benefits of their construction must outweigh the costs.⁷ The financial feasibility of these developments relies on several considerations, including:

- **Market and economic factors:** structures within the development must be mutually supportive of one another to enable “synergy” amongst them and thus increase both the investment and market value of the development. Synergy amongst projects is achieved when individual structures within the development can generate revenue from customers of others such as when occupants of residential or commercial space shop at certain stores or eat at restaurants located within the same site. Additionally, this synergy can be achieved when one structure within the site acts as an amenity for another. For example, offices could use restaurants and hotels within the development site to attract potential tenants, while at the same time these hotels and restaurants rely on these office tenants to provide them business. Other examples of economic and market factors which influence the financial feasibility of mixed-use developments include the number of customers it plans to serve, income levels within the area, prices for both complementary and substitute goods and, although more difficult to capture, the ability to cater to individual tastes and preferences.⁸ The Rivers District Revitalization has been planned, to enable the synergies between the three proposed projects and create an overall arts, culture and entertainment district. It has also carefully considered the capacity the market must absorb the additional developments.
- **Competition with external projects:** competition with external projects is also considered to be a significant contributor to the financial success of mixed-use developments. For example, building a hotel within a development that just so happens to be within proximity of other hotels will likely lead to cases where the supply of rooms is greater than then demand, thereby leading to an uptake in vacancies. In this case, each structure needs to be analyzed with regards to local market dynamics given the characteristics of the surrounding area.⁹ The RDR must thoughtfully be sequenced with other projects planned for the city to maximize the success of the district.

⁷ Rabianski, J.S. & Clements, J.S. “Mixed-Use Development: A Review of Professional Literature”. National Association of Industrial and Office Properties Research Foundation, November 2007, <https://www.naiop.org>.

⁸ Ibid.

⁹ Ibid.



- **Design factors:** the concept is that all mixed-use developments must be based on a master plan, and that this plan must fully account for the surroundings in which the development is being built. In this case, when designing the development, it must be fully integrated within its respective neighbourhood to gain community approval.¹⁰ The RDMP is a master plan that integrates these design factors to optimize the setup of the district.

A mixed-use development is often characterized by both its cornerstone and dominant use. A “cornerstone use” in this case refers to the most viable and profitable structure contained within the development, and often determines which other structures are to be included in the development site. A “dominant use” refers to the structure that takes up the largest geographical space.¹¹ In recent years, projects associated with these mixed-use developments that often carry both characteristics include Event Centres or sports arenas.

While initial theory suggests that the economic effects associated with these facilities are positive, a large body of research suggests that the economic and financial outcomes of these projects are negligible, and may even be negative once public subsidization is accounted for. The construction of these facilities often comes with a price-tag exceeding a few hundred million dollars, much of which is covered by public funds from local taxpayers. The main justification behind subsidization of Event Centres/sports arenas is that they are often referred to as, “special activity generators”, in that they have the potential to generate economic surplus in the form of spillover spending benefits for surrounding areas, increased follow-on investments, and can rejuvenate a previously underdeveloped area, etc. Specifically, these structures have the capacity to anchor developments by drawing local and distant visitors to the area in which they are located, thereby leading to positive economic outcomes.¹²

However, opponents of using arts, convention, or events facilities as catalysts for economic development often refer to the opportunity costs associated with these structures, which can be substantial, whereby the funding of the project could be put towards alternative uses, such as general infrastructure improvements, increasing health and education expenditures, improving environmental conditions, etc. Funding these projects is suggested to produce their own economic benefits and advantages, some of which, in the long-run, may prove to provide higher economic impacts than those produced by a new Event Centre or sports stadium.

From an economic perspective for example, it could be argued that a dollar is best put towards uses that generate the greatest productivity. Using the example outlined previously, government spending on improving infrastructure (i.e., airports, highways, and bridges) would in general lead to high productivity as it would reduce the costs, which in this case is measured in time and money, of transporting goods and services. Another example would be increasing human capital investments through increases in

¹⁰ Ibid.

¹¹ Ibid.

¹² Chapin, T.S. “Sports Facilities as Urban Redevelopment Catalysts: Baltimore’s Camden Yards and Cleveland’s Gateway.” *Journal of the American Planning Association* 70, no.2 (2014): 193-209



education expenditures. Investing in resources that lead to increases in productivity are advantageous because they are directly linked to both economic growth and increased living standards.

However, despite the apparent drawbacks associated with subsidizing these facilities, there is a body of research that suggests that the return on these investments are positive. For example, sports stadiums and event centres are often praised for their ability to generate and accumulate both social and human capital. Social capital is simply the set of informal values or norms that is common between members of a group that allows them to achieve some level of internal cooperation with one another.¹³ In this case, developments such as those planned for the RDR have the potential to create a space in which groups can come together to foster relationships, while at the same time build a sense of common identity. Further, these developments often attract increased levels of human capital through what is referred to as the “experience economy”, where individuals are attracted to areas in which their places of work and entertainment are within proximity. Similarly, businesses also benefit from establishing themselves where they can attract and attain top labour talent, and seek out areas in which they can achieve both. Part of the long run success of these businesses is to locate to areas that are desirable for their employees, which provides developments like the Rivers District certain advantages.¹⁴

Key Message: EY conducted a thorough review of existing academic and industry literature to gauge the potential impacts of the RDR. The overall conclusion from this review appears to indicate mixed results, where some suggest that these developments provide little to no economic return, while others argue that these types of projects can be worthwhile investments.

¹³ Nabil, Noha., Elsayed, Gehan., & Eldayem, Abd. “Influence of mixed-land use on realizing the social capital.” HBRC Journal 11, no. 2 (2015): 285-298.

¹⁴ Rosentraub, M.S. “Sport Facilities, A New Arena in Edmonton, and the Opportunities for Development and a city’s Image: Lessons from Successful Experiences.” city of Edmonton. https://www.edmonton.ca/attractions_events/documents/PDF/RosentraubReport.pdf



8. Jurisdictional Comparisons

It is also important to examine what has taken place in other jurisdictions that have undergone similar developments encompassing arts, culture, convention and events centre facilities. This jurisdictional analysis qualitatively discusses the social, cultural and economic outcomes from similar cities to understand the potential outcomes from of the Rivers District Revitalization. The selected jurisdictions were based on pre-specified boundaries outlined by the cities and developers involved, which allowed for greater clarity and objectivity in the analysis for the following key reasons:

- Provides a more clear and consistent methodology on how the boundaries are defined among all jurisdictions.
- Information collected, for the most part, relates to the relevant development within each selected jurisdiction.
- Avoids misinterpretations that arise from arbitrarily expanding the boundaries of the comparator jurisdictions to include facilities within proximity (to avoid falsely assessing the size, and more importantly, the impacts of these jurisdictions).
- Establishes consistencies in defining facilities that fall outside the entertainment district to better understand social, cultural, and economic impacts from follow-on investments that occur outside the respective jurisdictions.

To narrow down the choice of comparator jurisdictions, objective selection criteria based on demographic, economic, regional, and development characteristics was used. These criteria include indicators such as population size, land size, development stage, and more. To start, nine jurisdictions that were most suitable to the proposed River District Revitalization were evaluated (see Figure 19 below).



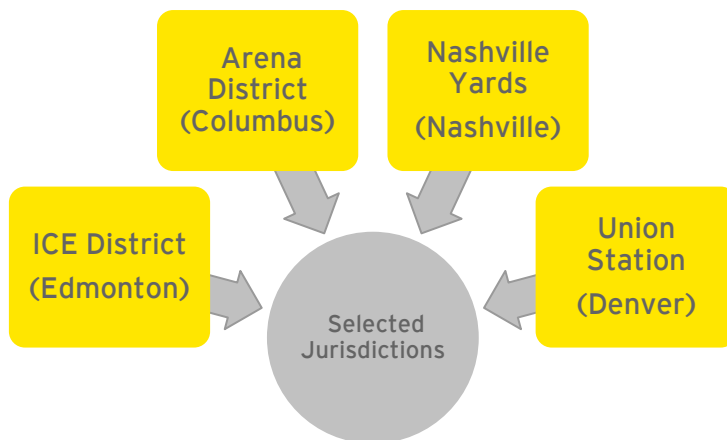
Figure 19: Objective Criteria Matrix

Criteria	City & Development								
	Edmonton, Alberta <i>Ice District</i>	Montreal, Quebec <i>Quad Windsor</i>	Columbus, Ohio <i>Arena District</i>	LA County, California <i>Hollywood Park</i>	Denver, Colorado <i>West Lot</i>	Denver, Colorado <i>Stadium District</i>	Nashville, Tennessee <i>Nashville Yards</i>	Tampa, Florida <i>Water Street</i>	Denver, Colorado <i>Union Station</i>
Comparable Population	✓	✓	✓		✓	✓	✓		✓
Comparable Unemployment	✓	✓		✓				✓	
Comparable Land Size			✓						
Development Stage	In-progress	In-progress	Completed	In-progress	In-progress	Planning	In-progress	In-progress	Completed
Event Centre	✓	✓	✓	✓	✓	✓	✓	✓	✓
Convention Centre			✓				✓	✓	
Arts/Performance Centre	✓		✓		✓		✓	✓	
Hotel	✓	✓	✓	✓	✓		✓	✓	✓
Residential Space	✓	✓	✓	✓	✓	✓	✓	✓	✓
Commercial/Retail Space	✓	✓	✓	✓	✓	✓	✓	✓	✓

In analyzing these developments, there was consistent mention of facilities outside the core development boundaries which in one way or another were linked to the development itself (indicated by the red check marks in Figure 19 above). When deciding which of the 9 jurisdictions would be selected as final comparators, these additional facilities were taken into consideration. Using this approach, four jurisdictions were selected (See Figure 20 below).



Figure 20. Selected Comparator Jurisdictions



Source: EY illustration.

8.1. Jurisdictional Comparator 1: ICE District

The first selected comparator jurisdiction is the ICE District located in downtown Edmonton. The development of the district initially began with the desire to turn Edmonton into a destination for which people from all corners of the world can come and enjoy. Once a dream that began nearly a decade ago in a city looking for change, Edmonton’s ICE District is set to become the largest mixed-use sports and entertainment district in Canada once completed. Anchored by what residents often refer to as “The Arena Deal”, the concept for the ICE District was to simply design, build, and operate Rogers Place. However, over time, the vision for the District grew, and is now home to some of Edmonton’s most sought-after retail, commercial and hospitality spaces.¹⁵ For a description of the criteria used to compare the ICE District with the potential Rivers District Revitalization, refer to Table 5 below.

¹⁵ Edmonton Economic Development. “Evaluation of the Benefits of Rogers Place”. Edmonton Alberta, 2018.

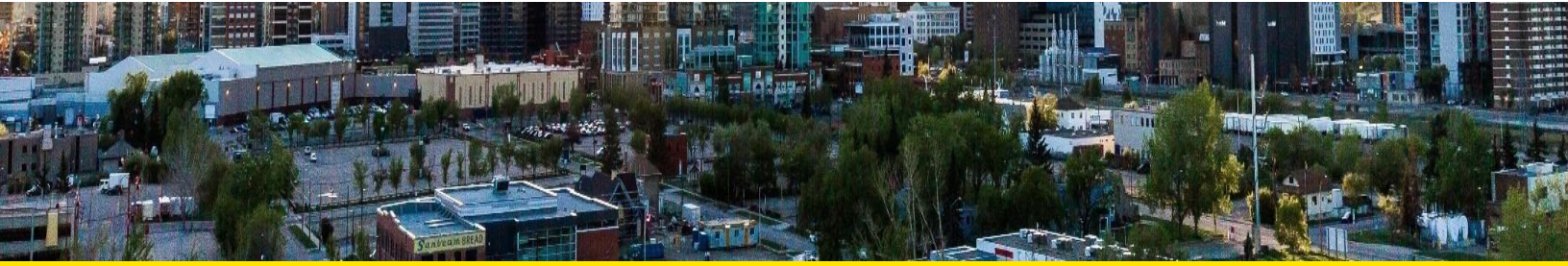


Table 5. Objective Criteria for ICE District

Criteria	Edmonton <i>ICE District</i>
Population	▶ 932,546
Population Density	▶ 1,306.9
Unemployment Rate (%)	▶ 8.8%
Project Land Size (Approx.)	▶ 1,089,000 sq. ft.
Median Age	▶ 35.7
Median Household Income	▶ CAD \$90,874 / \$USD 69,903
Average Household Size	▶ 2.5
Development Stage	▶ Completion expected for 2020/2021
Event Centre	▶ Rogers Place (NHL) ▶ Ford Hall ▶ Edmonton Community Arena
Convention Centre	▶ N/A
Arts/Performance Centre	▶ Art Gallery of Alberta
Hotel	▶ JW Marriott-Legends Residences
Residential Space	▶ Stantec Tower (residential) ▶ Edmonton Tower
Commercial/Retail Space	▶ Stantec Tower (retail and commercial)
Investment Spending	▶ The city of Edmonton will help fund their portion of the project through a Revitalization Levy over 20 years.
New Businesses Operations	▶ 12 new full-service on-site restaurants & 10 new mixed-use towers.
Employment	▶ Over 8,800 workers employed in the Ice District upon completion
Total Cost	▶ CAD \$2.5 billion



Figure 21: Image of Ice District (only shows a representative view)



The main takeaways from the ICE District development are presented below, which can be categorized by (1) **follow-on investments**, (2) **employment and wages**, (3) **qualitative impacts**.

Follow-on Investment

The ICE District has acted as a major catalyst in revamping Edmonton’s downtown core, by attracting new business development to the area. While it is difficult to establish a direct link, it is not unreasonable to assume or speculate that the District has had some influence on investments within the area. For instance, recent private development throughout Edmonton’s downtown core was estimated to be ~ CAD \$878 million. Some of these investments include Ultima Tower (~ CAD \$75 million), Fox Towers (~ CAD \$100 million), Encore Tower (~ CAD \$120 million) and the Enbridge Centre (~CAD 298 million). Additionally, major renovations have also occurred to some of Downtown Edmonton’s current facilities, such as Scotia Place (~ CAD \$22 million), City Centre Mall (~CAD \$41 million) and ATB Plaza (~ CAD 20 million). There has also been some discussion around building ICE District 2, which would be an additional extension to the current development. This extension would cover over 500,000 sq. ft. just behind Rogers Place, and would have the capacity to support another 3,000 residential units, retail and office spaces.¹⁶

¹⁶ Kent, Jessica. “ICE District is Expanding.” ICE District Properties, June 28, 2017. icedistrictproperties.com/news-media/news/ice-district-is-expanding/



Employment & Wages

The various projects associated with the development have had a deep impact on employment levels within the city. For example, since 2014, the ICE District has directly contributed 4,300 person-years of employment, meaning that on average, over the past 4 years, there has been approximately 1,000 full time employees building the ICE District on a given day.¹⁷ Furthermore, once all facilities become fully operational, it is expected that the ICE District will employ up to 8,800 full and part-time workers, 7,200 hundred of which will be office related, 1,000 hospitality-related, and 600 hotel-related.¹⁸ Additionally, there are projected to be ~30,000 total employees within a 5-minute radius from the District's location, and ~75,000 employees within a 10-minute radius.¹⁹ In terms of wages, developments within the ICE District are expected to contribute ~CAD \$393.6 million in wages and salaries.²⁰

Qualitative Impacts

The ICE District has also lead to an overall increase in the perception and vibrancy of Edmonton as a city. While difficult to quantify in theory, vibrancy is often thought of as “a measure of positive activity or energy in a neighbourhood.” This could potentially be measured by such indicators as the number of new residents moving into the area, or the increase in the number of hotel rooms used to accommodate tourists. As of today, the ICE District currently has 1,309 residential units and 346 hotel units under construction. For Downtown Edmonton in general, there are another 1,786 residential units currently under construction, indicating that the area expects a relatively high increase in the demand for those wishing to relocate. Similarly, the ICE District expects to receive an estimated 2.5 to 3 million visitors annually, and that since the opening of Rogers Place, has hosted more than 320 events.²¹

8.2. Jurisdictional Comparator 2: Arena District

The second selected comparator jurisdiction is the Arena District located in downtown Columbus. Like the ICE District in Edmonton, the Arena District is built in and around Nationwide Arena, home to the Columbus Blue Jackets NHL hockey team. Additionally, although not part of the actual development itself, the Arena District also includes the Huntington Park Baseball Stadium, which is home to Columbus's AAA baseball team. The total development covers approximately 3,267,000 sq. ft. and was completed in 2014. This ensured that EY met the requirement of including at least one jurisdiction that was fully completed as requested. Like many developments, the overarching goal of the Arena District was to rejuvenate an underutilized portion of the city. In a report commissioned by the Columbus Blue

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Oneproperties, *Introducing ICE District* (Edmonton Alberta, One Properties, 2016), 1-35.

²⁰ city of Edmonton. Updated Economic Impact Assessment for Downtown Arena and CRL Projects.

²¹ Edmonton Economic Development. “Evaluation of the Benefits of Rogers Place”. Edmonton Alberta, 2018.



Jackets hockey team in 2008 and carried out by the John Glenn School of Public Affairs at The Ohio State University, results indicated that the Arena District contributed substantially to the overall health and well-being of Columbus's economy, and has established itself as a thriving collection of entertainment attractions, restaurants and businesses. Using Nationwide Arena as its focal point, the goal of the report was to first establish the economic footprint of the Blue Jackets organization and Nationwide Arena on the Central Ohio area, while at the same time highlight the gross economic footprint of the Arena District itself.²² For a breakdown of the objective criteria used to evaluate the comparability of the Arena District with the RDR (please see Table 7 below).

²² Wirick, David. "Assessment of the Gross Economic Impact of the Arena District on Greater Columbus". Columbus Ohio: John Glenn School of Public Affairs Columbus, 2008. <http://bluejackets.nhl.com/ext/2008/AssessmentGEIArenaDistrictonGreaterColumbus.pdf>



Table 6: Objective Criteria for Arena District

Criteria	Columbus Arena District
Population	▶ 837,038
Population Density	▶ 1,448.7
Unemployment Rate (%)	▶ 6.9%
Project Land Size (Approx.)	▶ 3,267,000 sq. ft.
Median Age	▶ 32.1
Median Household Income	▶ CAD \$59,356/ \$USD \$45,659
Average Household Size	▶ 2.2
Development Stage	▶ Completed in 2014
Event Centre	▶ Nationwide Arena (NHL) ▶ Huntington Park (AAA Baseball)
Convention Centre	▶ Greater Columbus Convention Center
Arts/Performance Centre	▶ Express Live!
Hotel	▶ Courtyard by Marriott Columbus ▶ Hampton Inn & Suites Columbus ▶ Hilton Columbus Downtown
Residential Space	▶ 300,000 sq. ft. of retail space
Commercial/Retail Space	▶ 2,000,000 sq. ft. of office space
Investment Spending	▶ In total, the district has a private to public investment ratio of 14:1.
New Businesses Operations	▶ Since its inception in 2000, the Arena District has introduced 60 new or relocated businesses to Columbus (as of 2006).
Employment	▶ As of 2008, roughly 7000 people worked in the District compared to 1,870 before development.
Total Cost	▶ USD \$1 billion



Figure 22: Columbus Arena District



The main takeaways from the Arena District development are presented below, which can be categorized by (1) follow-on investments, (2) employment and wages, (3) property values, and (4) qualitative impacts.

Follow-on Investment

Another positive outcome of the development was the additional investment it generated over the life cycle of its construction. Aside from what was already planned for the area, an additional USD \$406.5 million was further invested in the District, which was primarily allocated towards developing further residential and commercial spaces. In this case, the ratio of private to public investment for the project was 14:1.²³

Employment and Wages

Like the ICE District, one of the main economic contributions of the Arena District was the impact it had on both employment and wages. For instance, the number of full and part-time workers in the area as of

²³ Iams, A., & Kaplan, P. "Economic Development and Smart Growth" Washington DC: International Economic Development Council, 2008. https://www.iiedc.org/clientuploads/Downloads/edrp/IEDC_Smart_Growth.pdf



2006 was 5,449, which was a 192% increase from pre-construction levels.²⁴ Additionally, as of 2007, roughly 7000 people worked in the District. Furthermore, total District wages equated to ~ USD \$352 million, which represented a per capita wage of USD \$64,655. This was an increase from pre-construction per capita wages of ~ USD \$41,718 in 2000.²⁵ Also, from 2000 to 2006 approximately 60 new or relocated businesses set up shop in the District, generating over 3,600 jobs.²⁶

Property Values

Property values within the District increased significantly from its pre-construction period, where between 1999 and 2008, the assessed value of property per square foot in the District increased by approximately 267%, whereas surrounding areas only experienced a 22% increase over the same period. Also, the occupancy rate in the District was 95% as of 2008, an increase of 17% from 2003 when construction of the area was still in its early stages. This further enhances the argument that the District played a major role in attracting new business to the area. Additionally, as of 2006, the amount of property tax collected from businesses located in the area was ~USD \$4.4 million, where before construction, the amount essentially zero.²⁷

Qualitative Impacts

Because of the areas development, the popularity and image of the city also benefited greatly, as the city has now hosted several well-established events such as the Arnold Sports Festival and Fitness Weekend, and the NCAA basketball tournament, both of which entertain thousands of visitors per year who contribute directly to Columbus's economy. Between 2005 to 2007, total visitor spending at all events held between Nationwide Arena and the Greater Columbus Convention Center was estimated to be ~USD \$211 million.²⁸ Furthermore, the District has helped drive the economic resurgence of downtown Columbus, as it is now a popular destination for both out-of-town visitors and locals.

8.3. Jurisdictional Comparator 3: Nashville Yards

The third selected comparator for our analysis is Nashville Yards in downtown Nashville. The Nashville Yards is a 15-acre mixed-use redevelopment of the former LifeWay Campus in the heart of Nashville's downtown core. The project includes 4,000,000 sq. ft. of mixed-use space, which includes office, retail, and residential developments and is projected to be completed between 2020 and 2021. While not directly located within the physical boundaries of the project itself, Nashville Yards is within walking distance to the Music City Center, the Country Music Hall of Fame and Museum, Bridgestone Arena, the

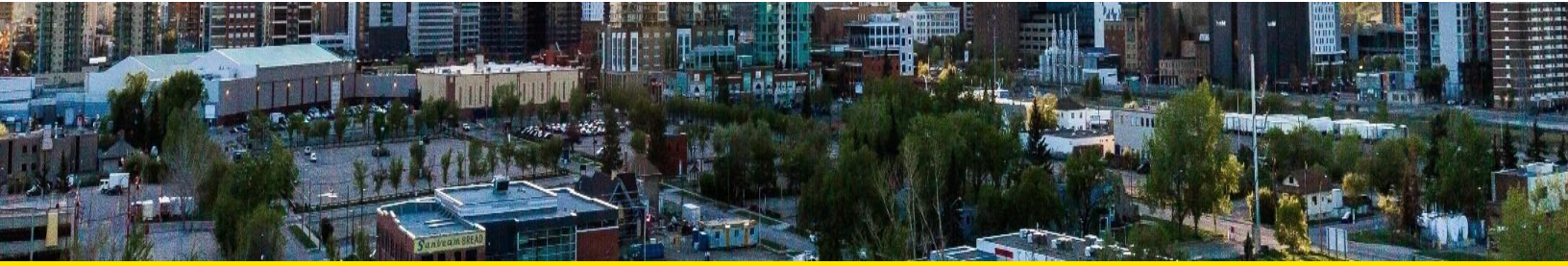
²⁴ Of this total, 3,542 were full-time workers and 1,907 were part-time workers.

²⁵ Ibid.

²⁶ Wirick, David. "Assessment of the Gross Economic Impact of the Arena District on Greater Columbus". Columbus Ohio: John Glenn School of Public Affairs Columbus, 2008. <http://bluejackets.nhl.com/ext/2008/AssessmentGElArenaDistrictonGreaterColumbus.pdf>

²⁷ Iams, A., & Kaplan, P. "Economic Development and Smart Growth" Washington DC: International Economic Development Council, 2008. https://www.iedconline.org/clientuploads/Downloads/edrp/IEDC_Smart_Growth.pdf

²⁸ Ibid.



Frist Center for the Visual Arts, The Johnny Cash Museum, and Nashville’s Honky Tonks. The development is also conveniently located close to Nashville’s central business district, the Tennessee State Capitol, the Gulch, Vanderbilt, Tennessee State and Belmont Universities, and major corporations in the area, including Bridgestone, Hospital Corporation of America, Dollar General, Nissan North America, and Under Armour. For a breakdown of the objective criteria used to evaluate the comparability of Nashville Yards with the Rivers District, see Table 7 below:

Table 7: Objective Criteria for Nashville Yards

Criteria	Nashville <i>Nashville Yards</i>
Population	▶ 643,771
Population Density	▶ 472.7
Unemployment Rate (%)	▶ 6.2%
Project Land Size (Approx.)	▶ 1,500,000 sq. ft.
Median Age	▶ 34
Median Household Income	▶ CAD \$61,908/ \$USD 47,621
Average Household Size	▶ 2.5
Development Stage	▶ Completion expected for 2020/2021
Event Centre	▶ Bridgestone Arena (NHL)
Convention Centre	▶ Music city Center
Arts/Performance Centre	▶ Frist Art Museum Centre
Hotel	▶ Grand Hyatt Hotel
Residential	▶ 344-unit apartment building ▶ North Gulch
Commercial/Retail Space	▶ 1,500,000 sq. ft. of class A office space ▶ 600,000 sq. ft. of retail space
Investment Spending	▶ Amazon Operations Center of Excellence will bring roughly US \$230 million in capital investment. State will provide USD \$87 in tax relief.
New Businesses Operations	▶ 11 new structures will be developed within the area for new businesses to occupy.
Employment	▶ Amazon will hire approximately 5000 employees for its new Operations Centre of Excellence.
Total Cost	▶ USD \$1 billion

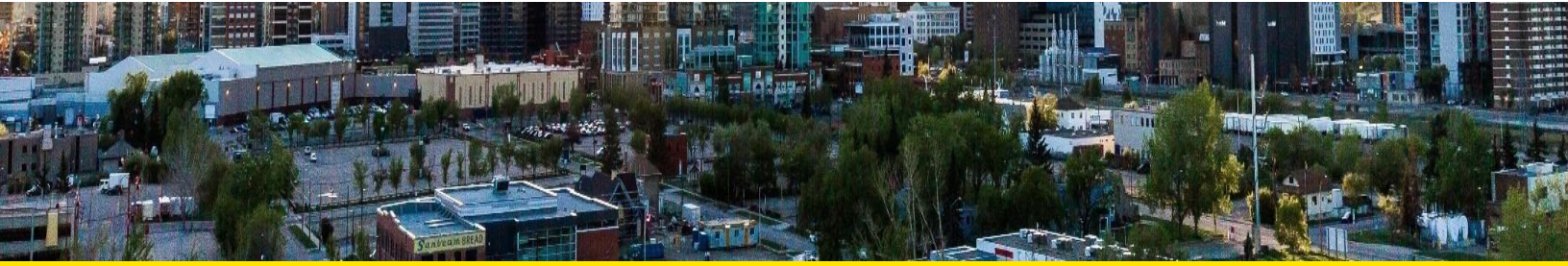


Figure 23: Nashville Yards



The main takeaways from the Nashville Yards development are presented below, which can be categorized by (1) **follow-on investments** and (2) **employment and wages** and (3) **qualitative impacts**.

Follow-on Investment

The Hyatt Hotels Corporation has committed to building the area's first luxury hotel, which will be a 591-room Grand Hyatt located at the heart of the development. Although it is unclear if there is a direct linkage between Amazon's investment and the Nashville Yards development, Amazon (one of the world's largest companies), will be investing ~USD \$230 million in the area by committing to the construction of their new Operations Centre of Excellence. This investment will add to the company's economic footprint in the region, where it is reported that Amazon's investment in the state to date has contributed ~ USD \$4 billion to Tennessee's GDP.²⁹

Employment and Wages

According to early reports from both private and public agencies, Amazon's Centre will employ approximately 5000 people, and will become Nashville's largest private employer. Furthermore, the

²⁹ Nashville Chamber of Commerce, "Amazon Announces Operations Center of Excellence in Nashville." November 13th, 2018, <https://www.nashvillechamber.com/blog/2018/amazon-announces-operations-center-of-excellence-in-nashville>



Centre will largely focus on attracting highly skilled and educated workers, as the average employee wage will be USD \$150 thousand dollars a year before tax.³⁰

Qualitative Impacts

The Nashville Yards development is set to include several public outdoor spaces which incorporate both the charm and history of Nashville, while at the same time offers a fresh take on urban living. For example, this includes the construction of an urban piazza and 1.4 acres of greenspace that is to be used for park and recreational activities. This is primarily to promote both physical activity and relaxation for residents, which has been shown, by the World Health Organization, to improve mental health outcomes. Furthermore, this greenspace is to be used as storm water infrastructure, which will help mitigate any property damage that might occur from excessive waterfall.³¹ Moreover, the layout of the Nashville Yards is designed in a way to present an overall community feel, where the buildings have been constructed in a way to integrate low-rise buildings with some larger towers, so that pedestrians do not feel overwhelmed by their experience when they visit. Second, for all buildings, each of the first two floors will have a variety of façade treatments, opening variability and interesting landscape elements, to ensure that visitors perception of the environment is positive.³²

8.4. Jurisdictional Comparator 4: Union Station

The final jurisdictional comparator for our analysis was the Union Station development in Denver. The total development area covers approximately 871,200 sq. ft., and came with an estimated cost of USD \$500 million. Like Nashville Yards, the Union Station does not include an event centre within its boundaries, but is within proximity of Coors Field, home to the Colorado Rockies baseball team. As the largest transportation and mixed-use development in the United States, Union Station was designed to become a staple of downtown Denver. Along-side a new and evolving transportation system, which included the construction of an 8-track CRT, 3-track LRT and 22-bay regional bus facility, Union Station also includes over 4,000,000 sq. ft. of mixed use- development and green space.³³ For a more comprehensive overview of the objective criteria comparing Union Station to the Rivers District, refer to Table 8.

³⁰Governor Haslam, Commissioner Rolfe Announce Amazon to Create 5,000 New Jobs in Nashville." Office of the Governor. November 18th, 2018. <https://www.tn.gov/governor/news/2018/11/13/amazon-to-create-5000-new-jobs-in-nashville.html>

³¹ Mazza, Sandy. "Mega-Developments are Hoping to make Downtown Nashville Greener." The Tennessean, April 11th, 2018.

³² Williams, William. "Designing a True Urban Experience." Nashville Post, September 20th, 2018.

³³Sirois, B., Barrett, D., Lien, M., & Cannon, F. "Denver Union Station: A True Public-Private Partnership," (presentation, Denver Colorado).



Table 8: Objective Criteria for Union Station

Criteria	Denver <i>Union Station</i>
Population	▶ 663,303
Population Density	▶ 1,652.5
Unemployment Rate (%)	▶ 5.4%
Project Land Size (Approx.)	▶ 871,200 sq. ft.
Median Age	▶ 34.2
Median Household Income	▶ CAD \$90,718/ \$USD \$47,621
Average Household Size	▶ 2.4
Development Stage	▶ Completed in 2014
Event Centre	▶ Coors Field (MLB) ▶ Pepsi Center (NHL)
Convention Centre	▶ N/A
Arts/Performance Centre	▶ N/A
Hotel	▶ The Oxford Hotel ▶ The Crawford Hotel
Residential Space	▶ 577 residential units
Commercial/Retail Space	▶ 730,000 sq. ft. of office space ▶ 678,000 sq. ft. of retail space
Investment Spending	▶ Federal funding accounted for USD\$300 million, while private investment/state funding was USD \$200 million
New Businesses Operations	▶ Approximately 10 new businesses moved into the area in 2018, including Quizlet, Facebook, and Slack Technologies
Employment	▶ Facebook hired over 100 employees while Quizlet hired 300
Total Cost	▶ USD \$500 million



Figure 24: Union Station



The main takeaways from the Union Station development are presented below, which can be categorized by (1) **follow-on investments**, (2) **employment and wages**, (3) **property development** and (4) **qualitative impacts**.

Follow-on Investment

Like many of the projects described above, one of the more prominent outcomes of the Denver Union Station development was the increased follow-on investment it generated, and the reputation it established for Denver as a destination for corporate headquarters. Additionally, due to the success of the Union Station development, there is now plans to redevelop Market Street Station for ~ USD \$200 million (expected completion for 2019).³⁴ This site is located just a few blocks south of the Union Station area, and will seek to add to the appeal of downtown Denver. Overall, the development has led to the construction of 25 new projects, which to date has generated ~ USD \$2 billion in private investments.³⁵

³⁴ <http://continuumpartners.com/>

³⁵ Sirois, B., Barrett, D., Lien, M., & Cannon, F. "Denver Union Station: A True Public-Private Partnership," (presentation, Denver Colorado).



Employment and Wages

In total, it is suggested that the development has generated 5000 direct jobs, along with 6,000 indirect and induced jobs. This in turn should generate ~ USD \$ 425 million in direct wages and ~ USD \$ 325 million in indirect wages. The total economic impact of the development is projected to be ~ USD \$ 3.5 billion.³⁶

Property Development

From 2000-2016, Denver's Union Station accounted for ~39% of the city's new office and retail space, and had the highest increase in average lease rates over this time. As well, due to the number of new residential investments in the area, Union Station increased its residential dwelling capacity by ~3,425, which accounted for 6% of all new development. In total, there is ~ USD \$743 million in real estate value throughout the area as of 2016.³⁷

Qualitative Impacts

With the revitalization of Union Station, the area expects there to be an increase in the number of individuals who visit the region, both locally and outside the city's boundaries. The area hosts many popular shows and attractions, which includes the Union Station Holiday Market, The Grand Illumination, International Buskerfest and a summer concert series.³⁸ Additionally, the development has re-established Denver as a major transportation hub, and creates a pedestrian-friendly environment. The development also included the construction and revitalization to various public structures, such as the Wynkoop Plaza, Light Rail Plaza and the 17th Street Gardens, with the intention of fostering community engagement.³⁹ For instance, Wynkoop Plaza is home to seasonal markets where artists and craftsman can come together to sell their produce and art to the public.⁴⁰

Key Message: Overall, the analysis reveals the jurisdictional comparators witnessed a positive economic and social impact on their respective cities, and is an additional data point to provide the city of Calgary with a broad idea of what could be expected from the Rivers District Revitalization. Specifically, the comparators noticed increases in follow-on investments, wages, employment levels, property values, and qualitative impacts. It should be noted that the effects are idiosyncratic, meaning that the magnitude of each impact will not be consistent across all jurisdictions. Also, the outcomes from these jurisdictions need to be interpreted carefully, especially as it relates to the impact these developments have on regional employment levels. In this case, a large portion of the jobs created because of these developments likely accounts for redistributed labour from other portions of the city, and should not necessarily be treated as net new jobs.

³⁶Ibid.

³⁷ Knudtsen, Andrew. "Economic of Transit-Oriented Development (TOD)." (Presentation, Denver Colorado, May 6th, 2016).

³⁸ Union Station. <https://unionstationindenver.com/>

³⁹ continuumpartners.com/project-page/union-station-district/

⁴⁰ <http://denverurbanism.com/wp-content/uploads/2011/05/USNC-Historic-Station-Booklet-4-18-11.pdf>



9. Other Impacts within Surrounding Areas

Specific spillover effects that surrounding areas are likely to capture because of the RDR have also been considered. While the number of effects may be large, the most relevant and transparent include the impact on property values, wages, the environment, employment levels as well as social, cultural, connectivity and tourism impacts. The neighborhoods likely to observe spillover include: Downtown East Village, Ramsay, Inglewood, Beltline, Mission, Erlton and Downtown Commercial Core.

9.1. Property Values

Large developments, such as the RDR, can produce both positive and negative effects on property values, depending on a multitude of factors. Research suggests that proximity plays an important role in the relationship between developments and property values, whereby the closer the property is to the developments location, the net effect of the property value will likely be very positive. For example, negative externalities such as increased levels of pollution, traffic congestion, crime and noise may adversely impact property values, whereas proximity factors to retailers and entertainment positively impact property values. In other words, if the development happens to be close to major shopping centers or individuals' place of work, individuals are likely to pay higher prices to live in these areas, with minor consideration to possible negative externalities.⁴¹

It has also been suggested that the association between mixed-use developments and property values are likely nonlinear. More specifically, in terms of proximity, there appears to be an ideal distance where property values are most likely to capture the positive externalities generated by these facilities, thereby increasing their worth but reducing in value considerably after a certain point.⁴²

Another factor that influences property values is the nature of the actual structures in the development. Commercial developments such as retail space, office buildings and industrial sites have negligible impacts on property values. However, structures such as event centres and sporting arenas typically generate some level of economic impact on property values. This is because these structures produce "civic pride" for area residents, which causes an increase in potential residents' willingness to pay for housing.⁴³ This provides context on the continued support for the construction of event centres despite a volume of literature suggesting that the benefits are negligible.

⁴¹ Aydin, Recai & A. Smith, Barton & Crawford, Evert, "Commercial Development Spillover Effects upon Residential Values." *Southwestern Economic Review*. 37 (2010): 47-61.

⁴² Ibid.

⁴³ Tu, Charles, "How Does a New Sports Stadium Affect Housing Values? The Case of FedEx Field." *Land Economics*. 81, no.3 (2005):379-395.



9.2. Wages

The second major impact the Revitalization is likely to produce on the surrounding areas is the change in median income. Large developments typically impact wages through three primary channels, which includes prices, amenities, and urbanization. Beginning with prices, it has been established that mixed-use developments, at least in the short run, lead to the overall decrease in consumer purchasing power by general prices of goods and services likely to increase in and around the areas in which these developments are located. As a result, it's likely that it becomes more expensive for consumers to purchase every-day items such as groceries, gas, meals, etc. In turn, theory would suggest that residents in these locations would seek out higher paying jobs, thereby increasing wages throughout the area. This would be more of an issue for areas that are directly linked to east Victoria Park, such as Downtown East Village, as the price effects generated from these developments becomes significantly less prominent the further away businesses are from the developments locations. This is often referred to as the "intercity cost of living differences," where individuals would require higher wages to reside in areas where these mixed-use developments are built.

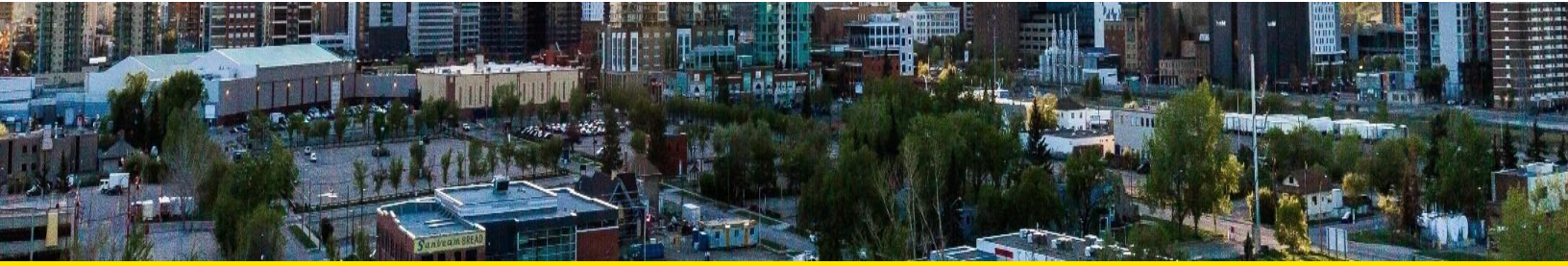
In contrast, it has also been suggested that these developments often generate, and exacerbate, income inequality through both an amenity effect and urbanization. These developments often create what economists refer to as a "knowledge-based economy", which inherently favours high-skilled workers over low-skilled workers. As a result, wages for those who are more skilled and educated often increase, while wages for low-skilled labour either remain static or decrease. This in turn leads to cases where low-skilled workers could be displaced or dispersed to lower cost areas.⁴⁴

Regarding urbanization, these developments have been shown to attract individuals from surrounding areas. It is not unreasonable to suspect, that some residents from the suburbs of or outside of Calgary may decide to move to the city because of the Rivers District Revitalization. In this case, the laws of supply and demand dictate that as more residents move into the surrounding areas, then the supply of labour should exceed the demand for some jobs, thereby putting downward pressure on wages to some extent. However, this is likely to be more of an issue for those in low-skilled occupations.

9.3. Environmental

Academic and industry research often suggests that these developments lead to, and often, generate improved environmental outcomes. In this case, mixed-use developments have been shown to exert some influence on resident transportation choices. The hypothesis here is that, if residents are within proximity of these developments, then they are more likely to walk or bike as opposed to use other modes of public (or private) transportation. However, the size of this effect dissipates substantially the further out individuals are from the location of these developments. For instance, studies have shown that some

⁴⁴Moos, M., et al. "Planning for Mixed Use: Affordable to Whom?" *Journal of the American Planning Association*, 84:1, (2018). 7-20.



amenities within these developments encourage non-automotive transportation only if residents are within at least 300 feet (i.e., a few blocks) of their location, with almost no effect past this threshold. These developments have also been shown to lower vehicle ownership rates, decrease the number of automotive trips taken per week, and shorten average commute times, all of which lead to improved environmental conditions, which further lead to positive economic outcomes in improved productivity. Nevertheless, the size of the impact depends considerably on factors like household income and population densities. In this case, if the development is built in high density neighbourhoods as opposed to low density neighbourhoods, their influence is larger.⁴⁵

9.4. Employment

Mixed-use developments often comprise of structures that require a large labour force to operate, and rely on local labour pools to meet these vacancies. Specifically, for sport arenas and event centres, research has found that there is a positive relationship between the construction of these complexes and labour growth in both the service and retail sectors. As an example, the Roger's Place located in the ICE District in Edmonton, Alberta currently supports approximately 4,000 FTEs with a large percentage within the service and retail sector to support the merchandising, hospitality, and general maintenance needs of the district.⁴⁶ Further, mixed-use developments usually include hotels, residences, and general commercial sites, all of which employ large number of workers in both the retail and service sectors.

While the benefits to employment are apparent, some studies have suggested that the job creation effect from these developments, particularly as they relate to event centres and sports stadiums, is relatively low. The argument here is that these structures don't lead to an increase in net new jobs, but rather redistribute existing labour. Furthermore, most of the jobs created within these developments are part-time or seasonal, and therefore only act as a temporary shock to regional employment levels.⁴⁷

9.5. Cultural, Social, Connectivity and Tourism Impacts

Aside from the direct and indirect impacts of the capital investment and operational spending of the three facilities and the likely qualitative impacts to the surrounding neighbourhoods, there are many additional benefits associated with the Rivers District Revitalization that are not captured by a standard I-O model. These benefits are qualitative in nature, and account for the effect the RDR is likely to have on Calgary in terms of social, cultural, entertainment and connectivity impacts. Some of these impacts may include, but are not limited to, the improved perception of Calgary as an arts, culture and entertainment destination, increases in the well-being of Calgarians, and a better perception of the city overall (locally, nationally, internationally). Although much of the analysis focuses on positive impacts,

⁴⁵ Cervero, R. "Mixed Land-Uses and Commuting: Evidence from the American Housing Survey." *Transportation Research*.30, no. 5 (1996):361-377.

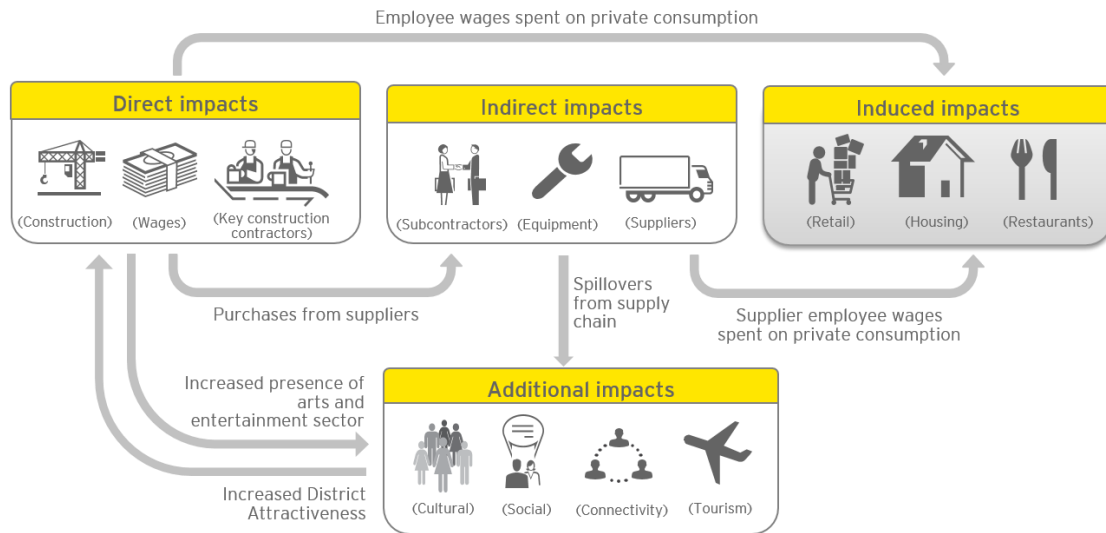
⁴⁶ city of Edmonton - Updated Economic Impact Assessment of Downtown Arena and CRL Projects.

⁴⁷ Baade, R.A. "The Impact of Stadium and Professional Sports on Metropolitan Area Development." *Journal of Urban and Regional Policy*. 21, no.2 (1990): 1-14.



there can also be negative consequences. These can include factors such as traffic and congestion, increased noise, displacement and a higher cost of living.

Figure 25: Additional Impacts of the Rivers District Revitalization



Source: EY illustration.

9.5.1. Cultural Impact

Calgary has long been regarded as one of the most culturally diverse cities in North America. Today, the city is home to more than 120 spoken languages, a vibrant and prospering arts sector, and world-renowned restaurants offering cuisines from across the globe. Calgary is a welcoming destination with a globally connected workforce and a flourishing international community.⁴⁸

Over the last several decades, the city has completed several initiatives aimed at improving its cultural footprint. In 2007 for instance, the city put into motion the *Art Space Strategy and Capital Plan*, which was designed to increase the amount of cultural infrastructure in an around the city’s boundaries. Structures such as The National Music Centre, Folk Festival Hall, Taylor Centre for the Performing Arts, Nickle Galleries, The Performing Arts Youth Centre, Decidedly Jazz Danceworks Dance Centre, the King Edward Arts Incubator (CSpace) and the Evergreen Community Spaces have all been constructed, which attract thousands of visitors to the city each year.⁴⁹

⁴⁸ city of Calgary. “Calgary in the New Economy.” Calgary Economic Development. Retrieved from: <https://www.calgaryeconomicdevelopment.com/assets/Calgary-in-the-New-Economy/Calgary-in-the-New-Economy-Final.pdf>

⁴⁹ Calgary Arts Development. “Arts and Culture Infrastructure Strategy”.” Retrieved from: <https://calgaryartsdevelopment.com/publications/building-on-our-momentum/>



Furthermore, the city has also taken an active role in developing its cultural scene by increasing the number of festivals and events held within the city on an annual basis. Calgary recognizes that these festivals and events enhance the quality of life for its citizens, and are an essential element for creating complete and prosperous communities. In 2016 for example, the city supported approximately 272 events, of which 159 received some level of public funding.⁵⁰ Other important cornerstones of Calgary's cultural identity include its tourism sector. Internationally recognized, Calgary is a gateway to Banff National Park, and is home to other popular sites and amenities, including: the Calgary Stampede, Spruce Meadows, Calgary Folk Festival, Glenbow Museum, Calgary Zoo and Heritage Park.⁵¹

As of 2016, the city has committed to achieving various strategic initiatives outlined in the *Cultural Plan for Calgary*, which is an ambitious 10-year plan aimed at better utilizing and enhancing the city's cultural resources. The targets of the plan over the next 10-years is to increase the city's employment and tax base by developing its creative industries and cultural tourism sector, attract and retain skilled workers, build a more livable city using current and future spaces and places, and maximize the creative potential of its people. The Plan envisions Calgary as a place that is recognized as a connected, exciting, cosmopolitan, cultural centre that works in partnership with its cultural sector and creative industries to establish positive benefit for the local economy.⁵² In addition, the Arts Development Strategy for Calgary (Live a Creative Life) envisions Calgary as a place that empowers every resident to live a creative life, fuelling a vital, prosperous and connected city.

9.5.2. Social Impacts

Art and culture generate substantial "intangible" or non-monetary economic effects. More specifically, art and culture have a "soft" function for enhancing one's quality of life or well-being, which is fundamental for cities to maintain their competitiveness. Moreover, art and culture have the capacity to increase human creativity and innovation, and can also act as a gateway for stimulating civic pride, lead to increases in one's personal development, and foster prosperity and acceptance amongst different groups.⁵³ A key component of the RDMP is the creation of public spaces that all Calgarians can enjoy, regardless of social status or income level.

Focusing on well-being, literature suggests that one way that arts and culture enhance the well-being of individuals is through the act of volunteering. By going forward with the Rivers District Revitalization, the city would in turn be directly increasing the number of volunteer opportunities for its citizens, as there would now be additional space to accommodate more shows and events that would draw on the

⁵⁰ city of Calgary. "Arts & Culture." www.calgary.ca/SitePages/cocis/Scripts/SubCategory-ArtsCulture-Grid.aspx.

⁵¹ Calgary Economic Development. "Calgary in the New Economy." <https://www.calgaryeconomicdevelopment.com/assets/Calgary-in-the-New-Economy/Calgary-in-the-New-Economy-Final.pdf>

⁵² city of Calgary. "Cultural Plan for Calgary". <https://www.calgary.ca/CSPS/Recreation/Pages/Arts-and-culture/Cultural-Plan-for-Calgary.aspx>

⁵³ Van Der Borg, J., & Russo, A.P. "The Impacts of Culture on the Economic Development of Cities." European Institute for Comparative Urban Research. 2007. <https://www.wien.gv.at/meu/fdb/pdf/intern-vergleichsstudie-ci-959-ma27.pdf>.



support of community volunteers. Volunteering has been shown to lead to increases in both social and economic outcomes, both for businesses and individuals. In terms of the former, organizations can draw on a pool of labour that not only provides additional capacity and skills, but also helps them stay in touch with their audiences. For individuals, they can acquire unique skill sets and knowledge, which will help them with future employment prospects and training opportunities. Furthermore, volunteering allows individuals to maintain healthy and active lifestyles, and leads to an increase in social development through interaction with fellow community members, and fosters an overall “team mentality.”⁵⁴ Additionally, arts and culture are also considered primary determinants for improving mental health outcomes. For example, increases in motor activities, such as through dance and other forms of creative movements, has been shown to directly decrease individuals stress and anxiety levels. Likewise, art and culture play an important role in determine one’s psychological state, whereby individuals in areas where art and culture are more prevalent have reported increased levels of happiness and satisfaction.⁵⁵

The Rivers District Revitalization can also improve Calgary’s perception as a city both locally and internationally. Using the *Hull UK city of Culture Project* as a benchmark, one can see just how important the general perception and attitude of a city’s art and cultural sector are to its overall appeal. In 2017, Hull was awarded UK’s Cultural city of the Year award, which established the city as the premier art and cultural destination throughout the country. Internal attitudes of the city both before and after the project showed that approximately 75% of residents were proud to call Hull home, with nearly the same number of people speaking positively about city. On an international level, a recent UK survey found that perceptions of Hull’s arts and cultural scene improved substantially, with visitors scoring their satisfaction with the city as 4.6 out of 5. As a result, this led to a significant increase in consumer expenditures throughout the art and cultural sector, where total revenues on ticket sales alone to various shows and events equated to approximately £8.73 million pounds. This in turn represented a 13.6% increase in earned revenue across the sector from before the title was awarded.⁵⁶ Although inherently different from receiving a title, the Rivers District Revitalization will include projects that should receive a broader range of attention from both the domestic and international community, which should provide Calgary with similar benefits to what was experienced by the city of Hull in 2017.

9.5.3. Connectivity Impacts

When measured by population, Calgary is the fourth largest city in Canada (following Toronto, Montreal and Vancouver). However, when it comes to land area, it is larger than each of these cities, being almost 30% larger than the city of Toronto. While there are many reasons for Calgary’s lack of density, including

⁵⁴ city of London Corporation. “*The Economic, Social and Cultural Impact of the city Arts and Culture Cluster.*” <https://www.cityoflondon.gov.uk/business/economic-research-and-information/research-publications/Documents/research-2013/Economic-social-cultural-impact-of-the-city-arts-and-culture-clusture-ForWeb.pdf>

⁵⁵ Stuckey, H.L., & Nobel, J. “The Connection Between Art, Healing, and Public Health: A Review of Current Literature.” *American Journal of Public Health*, 100, no. 2 (2010): 254-263.

⁵⁶ University of Hull. “UK city of Culture 2017 Evaluation.” <https://www.hull.ac.uk/work-with-us/more/media-centre/news/2018/city-of-culture-evaluation.aspx>



tastes and preferences of residents, this characteristic of the city can create challenges towards developing a strong sense of community.

One of the objectives of the RDMP is to improve the connectivity to surrounding neighbourhoods and in and out of the district. This includes improved walkability, the creation of public spaces, and improved access points into the district. The specific projects to accomplish this include the creation of Stampede Trail as a designated festival street that will also have a retail component, as well as the 12th Avenue and 17th Avenue promenades which will increase accessibility. A connection to the LRT Green Line would also increase transit use and provide alternate modes of transportation to the district and to surrounding areas, including a better connection to the Beltline.

There are also concerns related to many of the above-mentioned projects. For example, surface parking in the area would be reduced (which can also be considered a positive incentive not to drive). Residents in nearby neighborhoods like Inglewood and Bridgeland could have concerns over congestion and spillover effects with traffic. However, the RDMP provides a comprehensive guide book to mitigate these types of concerns and traffic analysis has been part of that planning process.

9.5.4. Tourism Impacts

The Rivers District Revitalization has the ability enhance Calgary's reputation as both a social and cultural destination, both in North America and across the world. With the District's expansion and renovations to both Arts Commons and the BMO Centre, along with the construction of a new Event Centre, the city can attract a broader audience with more diverse tastes. Additionally, as these individuals commence on Calgary to view the shows, events and attractions held within the District, there will be additional benefits provided to Calgary's economy. These additional impacts include visitor spending on things such as food, beverages, gas, hotel accommodations and other miscellaneous purchases.

The RDR is also aligned with the Destination strategy for Calgary. This strategy calls for a collaborative effort to enhance the city's hosting infrastructure for events, festivals and performances. Specifically, the BMO centre will provide increased convention space, while the Event Centre and expansion of Arts Commons will provide additional, improved venues for many other activities and performances (arts, culture, entertainment, sports, etc.)

Key Message: There are numerous other potential impacts (both positive and negative) than can occur with this type of a revitalization effort, and they are important to consider along with the economic analysis. The area and the surrounding neighborhoods will see enhancements to the arts and cultural sector, creation of new public spaces, new connectivity infrastructure and likely undergo a longer-term change in demographics. These developments can lead to an increase in tourism, which may be accompanied by an increase in noise, traffic and congestion in the area.



10. Conclusion and Considerations

It is the intention of this report to be objective, fact based and conservative in the underlying assumptions wherever possible. Its purpose is not to decide or provide a recommendation on the proposed investments in the Rivers District, rather it is to inform the reader of the likely outcomes based on sophisticated modelling and comparisons to similar developments in other jurisdictions. This report can then be used by the reader as a data point in reaching their own conclusions.

The Rivers District has undergone substantial redevelopment and growth over the past decade, but only in certain areas. The RDMP is designed to unlock the potential of this district and realize the same transformation that East Village has seen over the past ten years to create a world-class cultural and entertainment district. For this reason and others, the expansion of Arts Commons, the BMO Centre as well as the construction of a new Event Centre are viewed as the catalysts to this revitalization. These projects have the potential to enhance the social and cultural framework of the city, as well as provide short and long term economic benefits.

Having gathered the appropriate data for the three proposed projects, the quantitative modelling results project a positive economic impact, both during construction and in ongoing operations. Primary areas that would be positively impacted include GDP, jobs, labour income and output. There are also many potential impacts that could occur related to social, cultural and connectivity enhancements in the district, making it more attractive and accessible for Calgarians and visitors. Both the quantitative and qualitative assessments performed for this report are directionally supported by what has been observed in comparator jurisdictions.

There are several important aspects to consider moving forward:

- Cities face multiple options when deciding where to invest money, and there are always competing priorities vying for the same dollars;
- There are various public and private funding options associated with these types of development projects, as seen in the comparative jurisdiction analysis. The funding structure can influence the attractiveness of any one project;
- Where possible, development decisions should be made in a planful and deliberate way that aligns to an overall vision or strategy (the whole is greater than the sum of the parts from one off projects).



Appendix

A.1 The Input-Output Model: Assumptions and Restrictions

An I-O model is subject to limitations both in concept and implementation. Like any economic model, the I-O model is conceptually an abstraction that attempts to be complex enough to accurately capture and estimate the most significant impacts to the real-life economy caused by economic activity, yet simple enough to be analytically and intuitively meaningful.

An I-O model reflects the observed interdependency between all the sectors of the economy. For Canada, Statistics Canada reports for 236 industrial sectors in the economy: (1) how each sector relies on the other 235 sectors for inputs to their production; and (2) how each sector supplies its products and services to each of the remaining 235 sectors. While an I-O model provides a consistent and intuitive way of measuring the economic effects of an economic activity, users should be aware of the assumptions and limitations of the I-O model's underlying approach, and in turn regarded its results merely as approximations. Some of these assumptions include:

- The relationship between industry inputs and outputs is linear and fixed, meaning that a change in demand for the outputs of any industry will result in a proportional change in production. The model cannot account for economies/diseconomies of scale or structural changes in production technologies, an assumption which does not necessarily hold in the actual economy;
- Prices are fixed in the model. Thus, the model is unable to account for elasticities, or more formally, how one economic variable changes in response to another.
- I-O models are static and does not consider the amount of time required for changes to happen. Changing the timeframe would not affect the magnitude of the estimates;
- There are no capacity constraints, and all industries are operating at full capacity. This implies that an increase in output results in an increase in demand for labour (rather than simply re-deploying existing labour). It also implies that there is no displacement that may occur in existing industries as new projects are completed;
- I-O models assume that the technology and resource mix (ratios for inputs and production) is the same for all firms within each industry, i.e. the 236 industry categories reported in Statistics Canada's input-output table. As such, our analysis describes industry average effects.
- The model assumes that the structure of the economy remains unchanged. Any structural changes in the economy since 2014 will therefore lead to changes to the multipliers, which could be implemented once Statistics Canada release updated input-output tables. As such, the more removed the year of analysis is from the year of the used input-output tables, the greater the uncertainties.
- The model does not consider the economic impacts or opportunity costs associated with using resources elsewhere. In the case of the Rivers District Revitalization, public funds used to help subsidize the construction of the Event Centre or Arts Commons for example could be used in



other areas such as healthcare, education, transportation, etc. Using these funds for alternative uses would generate their own economic impacts, which could potentially be larger or smaller than that of the Rivers District Revitalization. However, the model will not be able to capture this.

- Results from the I-O model should not be interpreted as causal impacts. That is, one should not take the economic impacts presented in this report at verbatim. We cannot say with certainty that X dollars of capital or operational expenditures will produce X number of FTEs or have an X amount of impact on GDP.
- The model does not consider substitutions amongst inputs, and that each industry in the model is regarded as having a single production process. For the Rivers District Revitalization, the model will not be able to account for supplier or material changes that may occur during the construction phases related to a price change (for example).

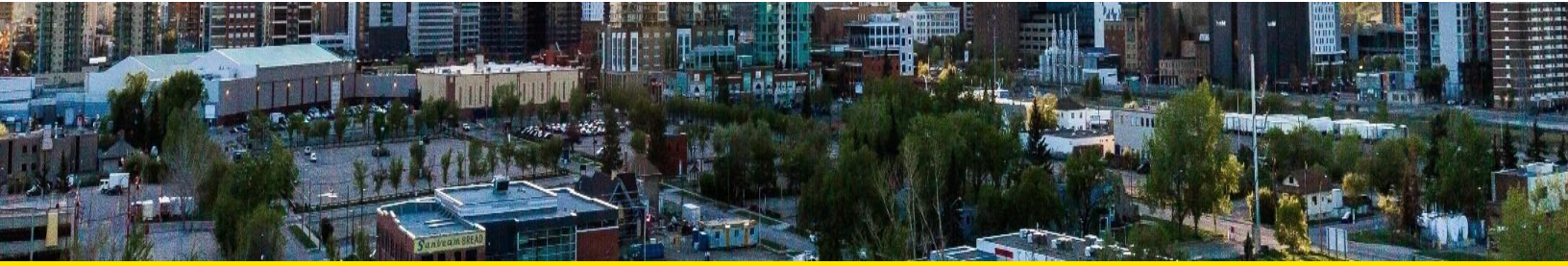
As per the assumptions above, the structure and limitations of I-O models lend themselves to measuring the impacts of projects that are shorter term in nature; generally, they are used to look at shocks to the economy. For longer-term, time series analysis and general equilibrium models are likely more appropriate.

Lastly, EY has relied upon the completeness, accuracy and fair presentation of all information, data, advice, opinions or representations obtained from public sources, key stakeholders, and third-party groups (collectively the “Information”). The findings of this report are conditional upon such completeness, accuracy and fair presentation of the Information as EY has not independently verified or audited the Information provided to us.

A.2 Detailed Breakdown of Expenditure Adjustments

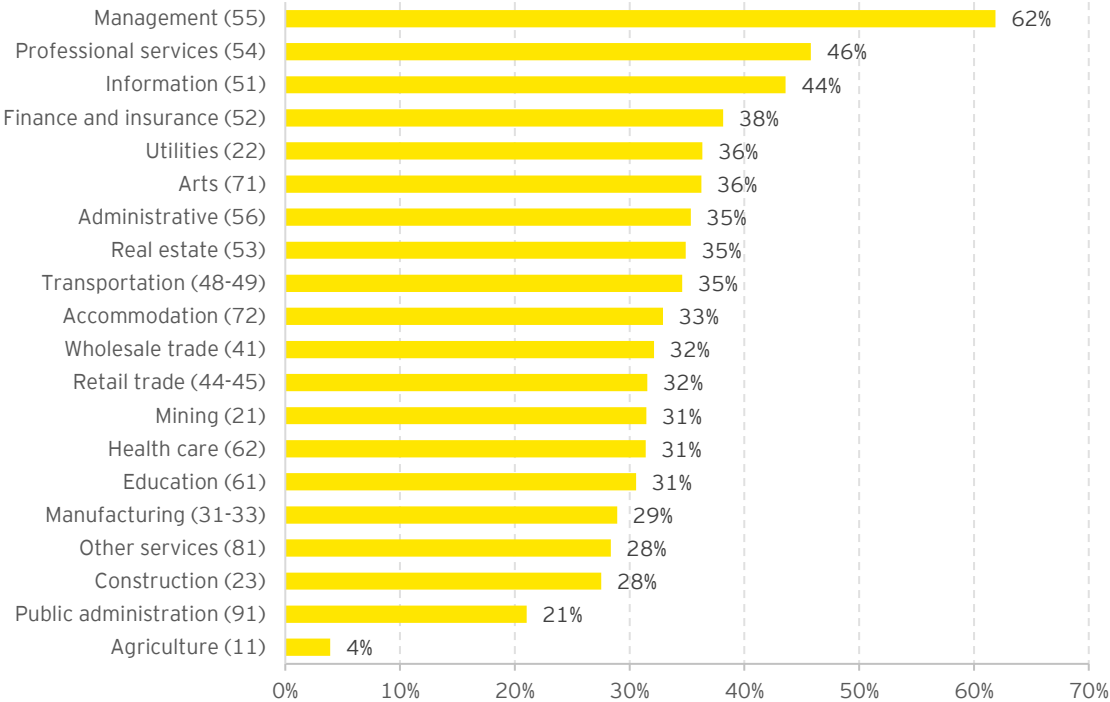
The following appendix describes in detail the adjustments made to the estimated capital and operating expenditures associated with the Rivers District Revitalization.

First, we consider the necessary adjustments to include only the expenditures that are spent within Calgary. This distinction between local and external expenditures is crucial for the accuracy of the impact analysis, however, it should be noted there are substantial uncertainties around performing such distinction due to lack of data availability. For capital expenditures, we need to identify to what extent the key contractors responsible for the construction of the three mega projects (i.e., Arts Commons, BMO Centre expansion, and Event Centre) will source their materials, subcontractors, machines, equipment from Calgary-based businesses, as opposed to business located outside of Calgary. For operational expenditures, these adjustments look to separate expenditures that are locally sourced versus costs that are sourced from outside of Calgary (i.e., how much of the labour costs are paid to employees residing in Calgary compared to outside, and what proportion of the expenditures are spent on purchases of goods and services located in Calgary compared to outside of Calgary). This for example will be crucial when examining operational data from the potential Event Centre, as a large percentage of this amount is likely to be spent outside Calgary (i.e., travel, business related functions, player salaries, etc.).



As a start, Statistics Canada’s input-output tables already adjusts for leakages outside the province of Alberta. Additionally, EY’s proprietary economic model makes further adjustment based on among other factors: industry linkages from input-output table data, the concentration of industry activity in Calgary relative to the province as measured by the industry’s share of employment in Calgary. For example, for both categories of expenditures, industries with high labour intensity are more likely to be sourced from Calgary with a large portion of employment and pay roll spending accruing to the local area. Moreover, service industries like administrative and support services are likely to be sourced almost exclusively from Calgary whereas the effective supply chain related to manufacturing and wholesale trade activities extends beyond the boundary of the city.

Figure #. Calgary’s share of total employment in Alberta, by industry



Note: NAICS codes for each industry are stated in brackets.
 Source: Statistics Canada, Census 2016.

Another concept we can use to determine the amount of capital and operational expenditures spent within the city of Calgary vs. outside the city of Calgary is what economists refer to as the “Gravity Model of Trade.” In short, the general purpose of the model is to predict bilateral trade flows between two agents (i.e., countries) based on two factors; (1) economic size (traditional measured by each countries respective GDP) and (2) the distance between the two countries. Focusing on the latter, we can adjust this model to account for the distance between the Rivers District Revitalization and suppliers of products and services (inputs) that are demanded.

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