



City of Richmond

Report to Committee

To: Finance Committee

Date: November 5, 2019

From: John Irving, P.Eng., MPA
General Manager, Engineering and Public Works
Chief Executive Officer, Lulu Island Energy Company

File: 10-6600-10-01/2019-Vol 01

Jerry Chong, CPA, CA
Director, Finance
Chief Financial Officer, Lulu Island Energy Company

Re: Lulu Island Energy Company – 2020 Operating and Capital Budgets

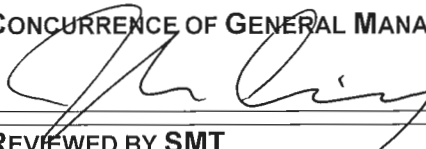


Staff Recommendation

That the Lulu Island Energy Company report titled “Lulu Island Energy Company- 2020 Operating and Capital Budgets”, dated November 5, from the Chief Executive Officer and Chief Financial Officer, Lulu Island Energy Company be received for information.

John Irving, P.Eng., MPA
General Manager, Engineering and Public Works
Chief Executive Officer,
Lulu Island Energy Company
(604-276-4140)

Jerry Chong, CPA, CA
Director, Finance and
Chief Financial Officer,
Lulu Island Energy Company
(604-276-4064)

Att 1:

REPORT CONCURRENCE	
CONCURRENCE OF GENERAL MANAGER 	
REVIEWED BY SMT	INITIALS: 
APPROVED BY CAO 	

Report

DATE: November 5, 2019

TO: LIEC Board of Directors

FROM: Alen Postolka, P.Eng, Manager, District Energy

Re: **Lulu Island Energy Company – 2020 Operating and Capital Budgets**

Background

The City incorporated Lulu Island Energy Company Ltd. (LIEC) in 2013 for the purposes of carrying out the City's district energy initiatives. Currently, LIEC owns and operates the Oval Village District Energy (OVDEU) and Alexandra District Energy (ADEU) Utilities while concurrently advancing new district energy opportunities and completing the due diligence planning process for the City Center District Energy Utilities (CCDEU) project.

The purpose of this report is to present the 2020 Operating and Capital Budgets to the Board for their approval. If approved by the Board, staff will present LIEC's 2020 Operating and Capital Budgets to Council for information in order to follow the City's reporting process.

2020 Operating Budget

The ADEU and OVDEU service areas and the associated operations, assets and liabilities are administered by LIEC. All capital and operating costs are recovered through revenues from metered billings, ensuring that the business is financially sustainable.

Both the OVDEU and ADEU are still new utilities in the early stages of operation, and even though some of the actual utility (electricity and natural gas), operation and maintenance past costs have been used for budgeting, the majority of these costs are still largely based on projections.

Customers' energy use (building performance) is estimated based on the historical metered energy consumption, average building performance in the region and energy modeling reports prepared by the buildings' designers. The 2020 Operating Budget incorporates estimated revenues and expenses from the ADEU and OVDEU based on the current projections, development activity and timing of connections for the year.

LIEC is classified as a Government Business Enterprise (GBE). As a GBE, LIEC is required to apply International Financial Reporting Standards (IFRS) in the preparation of its financial statements. Staff have prepared the 2020 Operating Budget below under IFRS:

2020 Operating Budget under IFRS

	2020 Budget	2019 Budget	\$ Changes	% Change
Revenues				
Metered Billings (Quarterly)	\$4,719,042	\$3,805,116	\$913,926	24%
Service fee	981,486	962,241	19,245	2%
	5,700,528	4,767,357	933,171	20%
Cost of Sales				
Contracts	792,325	751,809	40,516	5%
Utilities	1,030,750	896,938	133,812	15%
Amortization	1,258,025	1,163,066	94,959	8%
	3,081,100	2,811,813	269,287	10%
Gross margin	2,619,428	1,955,544	663,884	34%
General and Administration Expenses				
Salaries and benefits	732,835	669,053	63,782	10%
Administration expenses	149,900	136,121	13,779	10%
Insurance	95,000	70,000	25,000	36%
Professional Fees	69,815	65,000	4,815	7%
	1,047,550	940,174	107,376	11%
Net income before other items	1,571,878	1,015,370	566,508	55%
Contributions and Financing expense				
Developer contributions	169,888	106,760	63,128	59%
Energy modeling review fee	51,000	16,000	35,000	219%
Net financing expense	(481,423)	(429,339)	(52,084)	12%
	(260,535)	(306,579)	46,044	(15%)
Net Income	\$1,311,343	\$708,791	\$602,552	85%
Earnings before interest, taxes and amortization (EBITA)				
Net income per above	1,311,343	708,791	602,552	85%
Net financing expense	481,423	429,339	52,084	12%
Amortization expense	1,258,025	1,163,066	94,959	8%
EBITA	3,050,791	2,301,196	749,595	33%

Revenues

The metered billings reflect full year energy sales to four buildings which were connected partway through 2019 and partial year of energy sales for two new buildings connected in 2020. The budgeted sales are based on the best estimate of buildings connections timing, and customers' energy usage. The metered billings are expected to increase in 2020 by \$913,926 to \$4,719,042 (2019 – 3,805,116) due to:

- An increase of \$758,271 in metered billing due to additional energy use as a result of full-year service of four buildings that were connected for only parts of 2019 (Trafalgar, Spark, Westmark and Intracorp River Park Place 2) and partial 2020 connections of two new buildings (Polygon Berkeley House and ASPAC 12); and
- An increase of \$155,655 in metered billings due to the annual utility rate increase.

The service fee of \$981,486 (2019 - \$962,241) is for LIEC services of advancing district energy opportunities in the City, which results in numerous benefits to the City and the Richmond community. Staff and specialty consultants working on low carbon district energy initiatives are covered by the Service Fee. With or without LIEC, the City would need to fund these costs in order to successfully implement district energy initiatives for the City and position itself at the forefront of tackling local and global environmental challenges our world faces. The City identified district energy utilities (DEUs) as a leading strategy to achieve City's GHG reduction goals. To date, it is estimated LIEC District Energy system have resulted in a reduction of over 5,000 tonnes of GHG emissions. The proposed service fee amount for 2020 has been increased by 2% (Consumer Price Index).

The overall budgeted revenue is expected to increase by \$933,171 to \$5,700,528 (2019 – \$4,767,357).

Cost of Sales

The cost of sales is the accumulated total of expenses attributable to the metered billing revenue, which includes contract services, utilities (electricity and natural gas), and amortization expenses. The total contract expense is increased by \$40,516 to \$792,325 (2019 - \$751,809). The increase of this expense is due to additional operation and maintenance activities needed to service additional buildings.

Utility expenses are projected to increase by \$133,812 to \$1,030,750 (2019 - \$896,938). This increase is due to utility rates increases and increased energy sales to customers. Additional energy demand will result in increased use of distribution pumps, geo-field pumps, cooling towers, and natural gas boilers which are used to generate and circulate energy through the distribution piping system to the customer buildings.

The amortization expense increased due to capital asset additions. Overall, the cost of sales is expected to increase by \$269,287 to \$3,081,100 (2019 - \$2,811,813).

The gross margin percentage has increased by 5% to 46% (2019 – 41%) due to economies of scale. The ADEU service area is utilizing more renewable energy sources to meet heating demand while consuming less conventional energy sources.

General and Administration Expenses

The general and administration expenses are expenditures that LIEC incurs to support business activities, such as salaries and benefits, administration, professional fees, insurance, etc.

Table 1: General and Administration Expense Percentage of Revenue

	2020	2019
Percentage of Revenue		
Salaries and benefits	13%	14%
Administration expense	3%	3%
Professional fees	1%	1%
Total General and Administration Expense percentage	18%	20%

The budgeted general and administration expenses are projected to increase by \$107,376 to \$1,047,550 (2019 – \$940,174) due to:

- Salaries and benefits - The increase of \$63,782 is due to the addition of two students, as well as adjustments to existing salaries and fringe benefits based on the City’s forecasted annual increases.
- Insurance – The premium is expected to be higher due to a general insurance rate increase and the additional capital assets being insured.
- Administration expense – the administration expense is increased by \$13,779 to \$149,900 (2019 - \$136,121). The administration expense includes telephone, supplies, professional dues, memberships and printing expenses. This increase is mainly due to the growth of the business. The administration expense also includes overhead allocation paid to the City of Richmond for the day-to-day support that LIEC receives from City staff. Specifically, the overhead allocation paid by LIEC to the City of Richmond in 2020 is estimated at \$69,500 (2019 – 65,408).

Overall, G&A expenses as a percentage of revenues are at 18% for 2020 versus 20% for 2019.

Contributions and Financing Costs

The contributions and financing costs section represents other sources of revenue and financing costs for the business, which include:

- Developers contributions (energy transfer station fee) – This revenue refers to all the distribution piping systems, energy transfer stations and construction costs inside the development property line. These costs are paid by developers. LIEC owns these capital assets, and recognizes a contribution from developers for the amount reimbursed.

- The current energy modeling review fee is based on 2% of building permit fees. It is estimated that an additional 17 permits will be reviewed in 2020.
- Net financing expense – It is the net result of the finance cost of concession liabilities in the year, offset by interest income and other recoveries. The financing expense represents the financing costs incurred by LIEC through the OVDEU concession agreement with Corix. The funding through concession agreement is used to finance the construction of the capital assets which will result in an increase in the total amount of fixed assets appearing on the LIEC balance sheet. The net financing cost is expected to increase by \$52,084 to \$481,423 (2019 – \$429,339). The increase is due to the addition of LIEC acquired assets through the concession agreement and concession obligations on funding used to build those assets in the OVDEU service area.

Net Income and Earnings Before Interest, Taxes and Amortization (EBITA)

The net income is expected to be \$1,311,343 in 2020. EBITA, used to evaluate LIEC’s financial performance, is expected to increase by \$749,595 to \$3,050,791 for the budgeted year. EBITA as a percentage of revenue is 54% for 2020 compared to 48% in 2019.

LIEC’s financial sustainability and future growth must be taken into consideration when reviewing its EBITA and net income. LIEC’s success is dependent upon developing in-house expertise and placing earnings in provision account for the future capital replacement as the existing infrastructure components reach end of life. Other important factors are the planning of future projects, which includes research and development, and exploratory reviews of future technology and opportunities. Consistent with the corporation’s financial plan objectives, net income will be maintained in LIEC’s equity in order to fund future capital replacements and to ensure long term rate stability for rate payers.

2020 Capital Budget

Richmond continues to see sustained growth through development activity. Table 1 below represents anticipated development timelines in the current DEU service areas over the next five years.

Table 1: Estimated Development Timing for Future Connections (floor area in ft²):

Square Footage	2020	2021	2022	2023	2024
Current Service Areas					
Alexandra DEU (ft ²)	456,681	290,520	250,000	250,000	250,000
Oval Village DEU (ft ²)	368,459	760,669	310,540	736,000	-
City Centre DEU (ft ²)*	-	944,279	3,011,294	250,863	767,396
Total (ft²)	825,140	1,995,468	3,571,834	1,236,863	1,017,396
Cumulative (ft²)	4,988,578	6,984,046	10,555,880	11,792,743	12,810,139

*Assume the building connections under the interim city centre serving strategy; first connection expected in 2021

By 2024, it is estimated that LIEC will be servicing 12,810,139 ft² of floor area if development proceeds as planned. This figure is up 308% from the area currently serviced in 2019. In established service areas, this growth requires expansion of the existing district energy infrastructure in order to service new developments. Continuous, ongoing investment in the optimization of the existing infrastructure is required to maintain service levels and protect the assets. This growth also requires advanced planning of new district energy networks. Investment in advanced planning allows LIEC to look at, and take advantage of, new technologies and practices to improve operational efficiencies and accrue additional financial and environmental benefits. LIEC's capital budget ensures that appropriate funding is secured to deliver this work.

Alexandra DEU

There are currently ten buildings connected to the system, with three more residential buildings will be commissioned in late 2019 and early 2020. Some of the work relating to these new connections will be carried over in to 2020. Additionally, some of the system improvements included in the 2019 Capital Budget are still in progress and work will also be carried over in to 2020.

New Connections

In 2020, the design and construction of an energy transfer stations (ETS) for one new development (Primstone Gardens - 4008 Stolberg) within the ADEU service area is required. The estimated cost for this project is \$530,000, which will be funded from Service Connection Installation Fees contributed by the developer. Initial funding will come from the LIEC provision account and will be repaid after the contribution from the developer is received.

System Upgrades and Feasibility Studies

The capital projects includes upgrading the pipe support frame structure at the energy plant to make it more robust and ready for the Phase 5 expansion, as well as conducting a feasibility study to look at several electrical backup capacity options, including solar panels with batteries. The estimated cost of this work is \$55,000.

City Centre DEU

Eight developments, comprising of approximately 4.5 million square feet of residential, commercial, and hotel uses, have committed to construct and transfer ownership of low carbon energy plants to LIEC at no cost to LIEC. LIEC will operate and maintain these energy plants to provide heating and cooling services to these developments. As part of 2019 approved capital projects, Staff continue to engage with an outside engineering consultant to provide support to the developers' design teams, and to peer review the designs on behalf of LIEC during the detailed design of these energy plants. This work will continue in 2020.

When the construction of the energy plants begin, LIEC will need to engage an outside engineering consultant to provide inspections during construction and sign off after the commissioning of the low carbon centralized energy plants to ensure the infrastructure meets LIEC standards. As staff continue to secure commitment from upcoming developments within the City Centre area to provide low carbon energy plants, additional engineering support will be needed to work with the developers on their designs. Based on the estimated pace of development in the City Centre area, the estimated cost of this work in 2020 is \$525,000.

Advanced Design

Due to the continued fast pace of development in the City Centre area, advanced design activities are required in 2020 to support development and execution of plans to provide district energy services throughout the City Centre Area. The scope of work includes, but is not limited to:

- Advanced design for new and upcoming developments including DEU corridors and servicing plans;
- Professional fees to develop and secure DEU-ready building base;
- Professional fees to support negotiation and implementation of contracts to deliver future district energy services in the City Centre area (i.e. due diligence with Corix);
- Professional fees to support new business development such as alternative servicing models and strategies (i.e. financing options with Canada Infrastructure Bank);
- Professional fees to evaluate new technologies and practices to ensure existing and future systems are optimized; and

The cost for the above work will be funded from the approved 2019 Advanced Design capital budget.

Oval Village DEU

Currently the OVDEU services nine buildings, containing over 1,990 residential units and 2.2 million square feet. All capital funding for the OVDEU will be financed by Corix Utilities through the OVDEU concessional agreement. As defined by the terms of the concession agreement, the OVDEU 2020 capital plan is under review by Staff. Once the review has been completed, Staff will submit it to the Board for their approval.

The following funding sources are recommended to finance the 2020 Capital Projects:

Developer Contributions

Within the existing DEU service areas, Developers are responsible to fund the design and construction of ETS (energy transfer station) and onsite piping infrastructure which is located within their property.

LIEC Provision Account

Staff have completed financial analysis of the projected cash flow. The analysis shows that LIEC can fund the 2020 capital projects internally through the provision account while maintaining a positive cash balance.

The summary of the 2020 LIEC Capital Projects and recommended funding are presented in Table 2 below.

Table 2: 2020 Capital Projects and Funding Summary

	Total Capital Budget	LIEC Provision Account	Developer Contribution
<i>Alexandra DEU</i>			
<i>New Connection</i>			
• Primstone Gardens (4008 Stolberg)	\$530,000	-	\$530,000
• LIEC PM costs			
<i>System Upgrades and Feasibility Studies</i>			
• Upgrade the pipe support frame structure at energy plant	\$55,000	\$55,000	-
• Feasibility study of several electrical backup capacity options			
<i>Interim City Centre DEU</i>			
<i>Centralized Energy Plant Developments</i>			
• Engineering consultant for design support and peer reviews	\$525,000	\$525,000	-
• Inspections and construction support			
• LIEC PM costs			
Total	\$1,110,000	\$580,000	\$530,000

Conclusion

The 2020 Operating and Capital Budgets are presented based on staff's best estimates and assumptions available at the time of writing. The recommended capital budget for 2020 is \$1,110,000. In order to move ahead with the delivery of the 2020 capital projects, staff recommend that the 2020 capital projects be approved with funding secured from the developer contributions (\$530,000) and the LIEC Provision Account (\$580,000).



Helen Zhao, CPA, CA
Controller

- Att. 1: District Energy Utility Services
- Att. 2: Alexandra DEU Service Area map
- Att. 3: Oval Village DEU Service Area map

Attachment 1 – District Energy Utility Services

The City incorporated Lulu Island Energy Company Ltd. (LIEC) in 2013 for the purposes of carrying out the City’s district energy initiatives. LIEC owns and operates the Alexandra District Energy (ADEU) and Oval Village District Energy (OVDEU) Utilities and advances new district energy opportunities. Table 1 below provides a summary of the developments connected under the DEU service areas to-date.

Table 1 – District Energy Utility Service Areas

	Buildings To-Date	Residential Units To-Date	Floor Area	
			To-Date	Build-out
Alexandra District Energy Utility	10	1,736	1.9M ft ²	4.4M ft ²
Oval Village District Energy Utility	9	1,990	2.2M ft ²	6.4M ft ²
City Centre District Energy Utility	8 ⁽¹⁾	3,239 ⁽¹⁾	4.5Mft ² ⁽¹⁾	48M ft ²
DEU-Ready Developments ⁽²⁾	17	4,524	5.3M ft ²	N/A
Total Connected Floor Area			4.1M ft²⁽³⁾	58.8M ft²

(1) Commitments secured from upcoming developments in the City Centre; first connection expected in 2021.

(2) DEU-Ready developments are designed to connect to the City Centre district energy system at a future point.

(3) The “To-Date Connected Floor Area” figure corresponds to constructed developments currently served by a DEU.

Both the West Cambie and the Oval Village neighbourhoods are experiencing rapid redevelopment. LIEC has been growing to meet this increased energy demand, while maintaining exceptional reliability and quality of service.

Alexandra District Energy Utility (ADEU)

ADEU provides heating and cooling services to seven residential buildings in the ADEU service area, the large commercial development at “Central at Garden City”, the Richmond Jamatkhana temple and Fire Hall No. 3, comprising over 1,735 residential units and over 1.9 million square feet of floor area (See Attachment 2). While some electricity is consumed for pumping and equipment operations, almost 100% of this energy is currently produced locally from the geo-exchange fields in the greenway corridor and West Cambie Park, and highly efficient air source heat pumps.

The following table represents anticipated development connection timelines for the next three years:

Table 2: Development Timing in ADEU Service Area

	Anticipated Occupancy
Westmark (Phase 2)	2020
Polygon West (Berkley House)	2020
Primstone Gardens (4008 Stolberg)	2021
Ex-Jingon	2021
Alexandra Gate (Mandarin)	2022

Oval Village District Energy Utility (OVDEU)

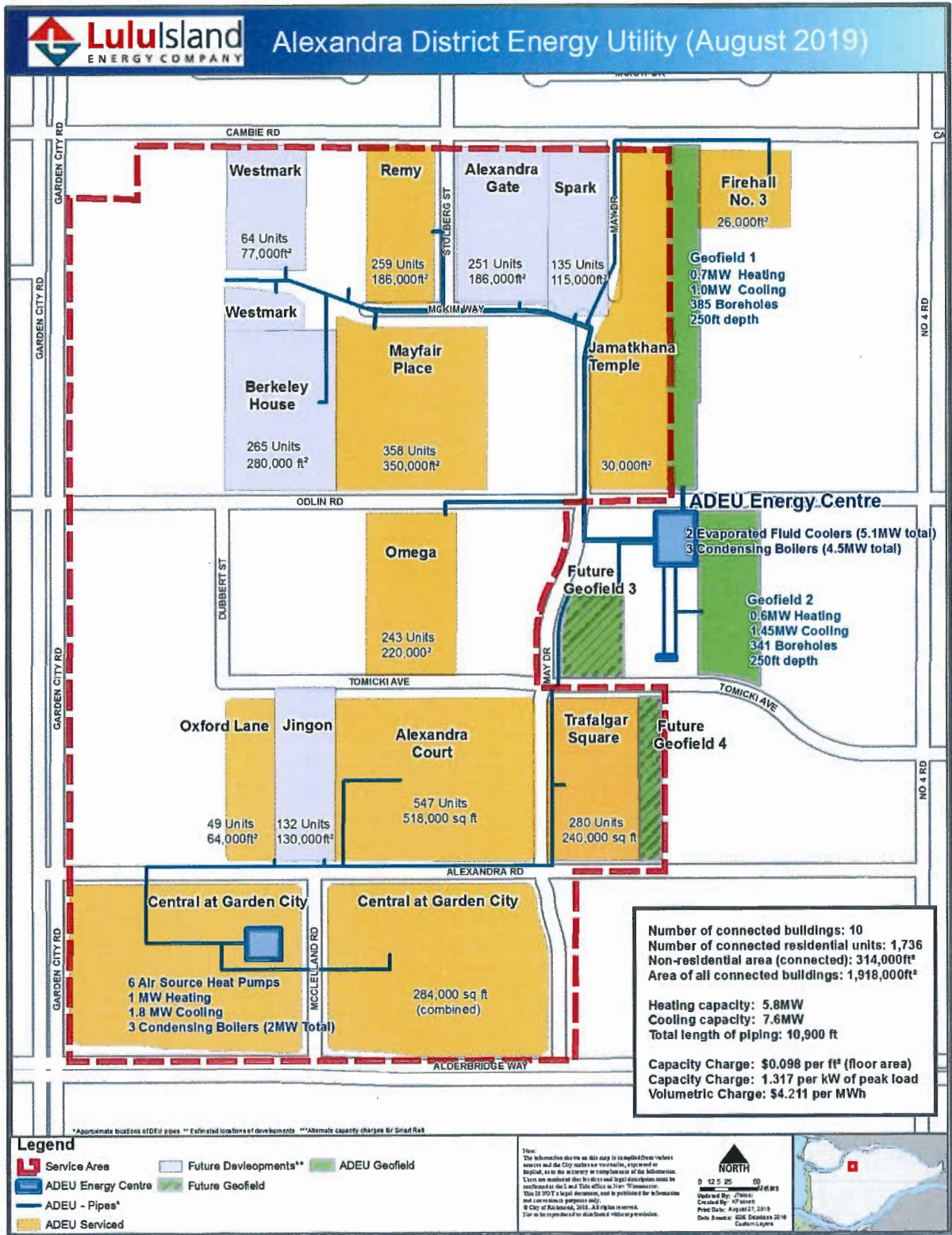
In 2014, LIEC and Corix Utilities (Corix) entered into a 30 year concession agreement, with LIEC maintaining the ownership of the utility. OVDEU services nine buildings in the OVDEU service area, containing over 1,990 residential units (see Attachment 3). Energy is currently supplied from the two interim energy centres with natural gas boilers which combined provide 11 MW of heating capacity. When enough buildings are connected to the system, a permanent energy centre will be built which will produce low-carbon energy. OVDEU is planned to harness energy from the Gilbert Trunk sanitary force main sewer through the implementation of the permanent energy centre in 2025.

The following table represents anticipated development connection timelines for the next three years:

Table 3: Development Timing in OVDEU Service Area

	Anticipated Occupancy
ASPAC Lot 12	2020
Landa – 7100 Elmbridge Way	2021
Onni Riva Ph3 Bldg 4	2021
Onni Alderbridge (Onni Riva 5)	2021
Park Residence - 6333 Mah Bing	2022
ASPAC 13	2022

Attachment 2 – Alexandra Neighbourhood and ADEU Service Area Informational Map



Attachment 3 - Oval Village Neighbourhood and OVDEU Service Area Informational Map

