SSL-Sustainable Services Ltd.
957 Langford Parkway
Victoria, BC
V9B 0A5

T: (250) 391-7260
F: (250) 391-7268
www.SSL-BC.com
info@SSL-BC.com

BCUC File 58524

February 4, 2019

via email

British Columbia Utilities Commission
Sixth Floor, 900 Howe Street, Box 250
Vancouver, BC V6Z 2N3

ATTN: Patrick Wruck, Commission Secretary

RE: BCUC – Sustainable Services Ltd. – Stream A TES Information Request

Dear Mr. Wruck,

Further to a request made by Laura Jones (BCUC Regulatory Engineer, Facilities and Planning) for additional information to supplement our original Stream A TES application of August 4, 2018, please find enclosed our responses.

Sincerely,

SSL-Sustainable Services Ltd.

Kyle Taylor
Manager

SSL-Sustainable Services Ltd.
957 Langford Parkway
Victoria, BC
V9B 0A5

T: (250) 391-7260
F: (250) 391-7268
www.SSL-BC.com
info@SSL-BC.com

Applicant Information

1. Please provide an e-mail contact address for the applicant (not a general inbox address);

Kyle Taylor - kyle@SSL-BC.com

2. Please provide the name and address of the Owner/CEO of SSL-Sustainable Services Ltd. (SSL);

N/A

3. Please provide the name and address of the Board Chair of SSL;

N/A

TES Specifics

4. Please provide the Piping & Instrumentation Drawing (P&ID) for the Westhills TES, if available.
We are unclear on what level of information is being sought here and will confer with BCUC staff to further review this requirement prior to drawing(s) submission.

5. Please provide information on the natural gas boilers located at the Energy Centre (including number and capacity);

There are two natural gas boilers at the energy center to provide the TES with backup and peak heating capacity. Boiler 1 is 750MBH input and Boiler 2 is 5000MBH input. Boilers are hot water condensing boilers manufactured by Camus Hydronics.

6. SSL states that "[e]nd users connect to the distribution network via on-site water-source heat pumps which provide space cooling." Please confirm, or explain otherwise, that SSL owns the on-site water-source heat pumps.

i. If confirmed, please explain the access arrangements for the equipment.

SSL owns the on-site water-source heat pumps. This equipment is provided to Customers under a lease agreement, whereby *"SSL at its own expense, shall service, maintain and ensure the WSHP is in good operating condition and repair, and at SSL's sole discretion, replace the WSHP when necessary, except where repair or replacement is required due to willful acts or the negligence of the Customer."*

Access arrangements are outlined in the lease agreement as follows:

SSL-Sustainable Services Ltd.
957 Langford Parkway
Victoria, BC
V9B 0A5

T: (250) 391-7260
F: (250) 391-7268
www.SSL-BC.com
info@SSL-BC.com

"At all reasonable times, SSL's agents and employees shall have free access to the WSHP, and to SSL's meters, wires and apparatus on the Customer's premises, for the purpose of reading meters and testing, installing, removing, repairing or replacing any of SSL's equipment. If access to meter rooms or other locations where SSL equipment is installed is restricted, the Customer shall supply SSL with lockbox keys or other keys or means of access as may be necessary to provide SSL with ready access to those locations. If access to SSL's equipment on the Customer's premises is denied or obstructed in any manner, including by debris, unsafe walkways or other means of access, or the presence of animals, and the Customer does not remedy the problem upon being requested by SSL to do so, service may be suspended until the problem is corrected."

In addition to the above, SSL holds a statutory right-of-way on these properties for the purposes of operating and maintaining the system.

7. SSL states that "[m]ost end user mechanical systems also include an electric (BC Hydro) or natural gas (FortisBC) backup/heating component." Please confirm, or explain otherwise, that the mechanical systems are owned by the end user.

i. If not confirmed, please explain the access arrangements for the equipment.

Further to our response to Question #6, an electric backup heating component is included as part of the water-source heat pump systems leased to customers by SSL.

8. BCUC Staff note that construction of the Westhills TES commenced in 2008, with commissioning of the first phase and establishment of utility operations occurring in 2010. SSL states that "Subsequent build-out of the TES... was phased with the Westhills development project and completed in 2017." Please provide a breakdown of the construction phases for the Westhills TES. In your response please identify each phase of the construction and provide the following information:

i. Site plan or map indicating the location / area of the phase;
ii. Number of customers connected;
iii. Service provided (heating, cooling, domestic hot water (DHW));
iv. Date of phase completion;

TES infrastructure was generally installed/expanded on a phased timeline consistent with that of other civil construction works for the overall Westhills development project. End-user connections to the TES were made as new buildings were constructed within each development phase.

The breakdown below summarizes relevant development phases at the subdivision/neighbourhood permit level, including the number of TES connections/customers within each phase and the TES services provided. These phases are also illustrated on the site plan attached as Appendix A.

It should be noted that the majority of TES connections are single-family homes; with the balance represented by several strata connections (see Question #13). Given the large volume, we have not

SSL-Sustainable Services Ltd.
957 Langford Parkway
Victoria, BC
V9B 0A5

T: (250) 391-7260
F: (250) 391-7268
www.SSL-BC.com
info@SSL-BC.com

provided municipal building permit numbers for each individual connection/customer at this time (see Question #11 for primary energy centre building permit info).

Phase Name:	**Lakeview Ridge**
Municipal Permit:	DP-08-06
Connections:	124 single-family homes
Services:	Heating, Cooling, DHW
Phase Completion:	2012

Phase Name:	**Glenvale**
Municipal Permit:	DP-08-12D
Connections:	151 single-family homes 2 town home strata (7 units & 12 units) 1 multi-family strata (68 units)
Services:	SFH - Heating, Cooling, DHW TH strata – Heating Condo strata – Heating, DHW
Phase Completion:	2014

Phase Name:	**Paradise Falls**
Municipal Permit:	DP-10-53
Connections:	134 single-family homes 2 town home strata (8 units and 5 units)
Services:	SFH – Heating, Cooling TH strata – Heating
Phase Completion:	2018

9. Please identify the primary thermal energy sources for DHW;

The source of DHW heating energy varies between customers and not all customers are designed to receive DHW heating from the TES. For the condo building customer, DHW pre-heating is provided from ambient-temperature district energy with final stage heating by a natural gas hot water heater. For some single-family home customers, DHW heating is provided through a combination of ambient-temperature district energy and electric resistance heat. Other single-family home customers and townhouse customers do not receive DHW heat from the TES.

10. Please provide the energy conversion technology used for DHW;

For those customers who receive DHW heat from the thermal energy system, an electric heat pump upgrades the ambient-temperature energy to heat the DHW. Final stage DHW heating for the condo building is provided by a natural gas hot water heater.

SSL-Sustainable Services Ltd.
957 Langford Parkway
Victoria, BC
V9B 0A5

T: (250) 391-7260
F: (250) 391-7268
www.SSL-BC.com
info@SSL-BC.com

11. Please provide the municipal building permit number for the development.

- **i. If permitting was completed for each construction phase, please provide the permit details for each phase.**
- **ii. If permitting was undertaken in a manner other than according to construction phases, please explain the permitting process and provide the relevant permit numbers. Please include site plans or maps as necessary;**

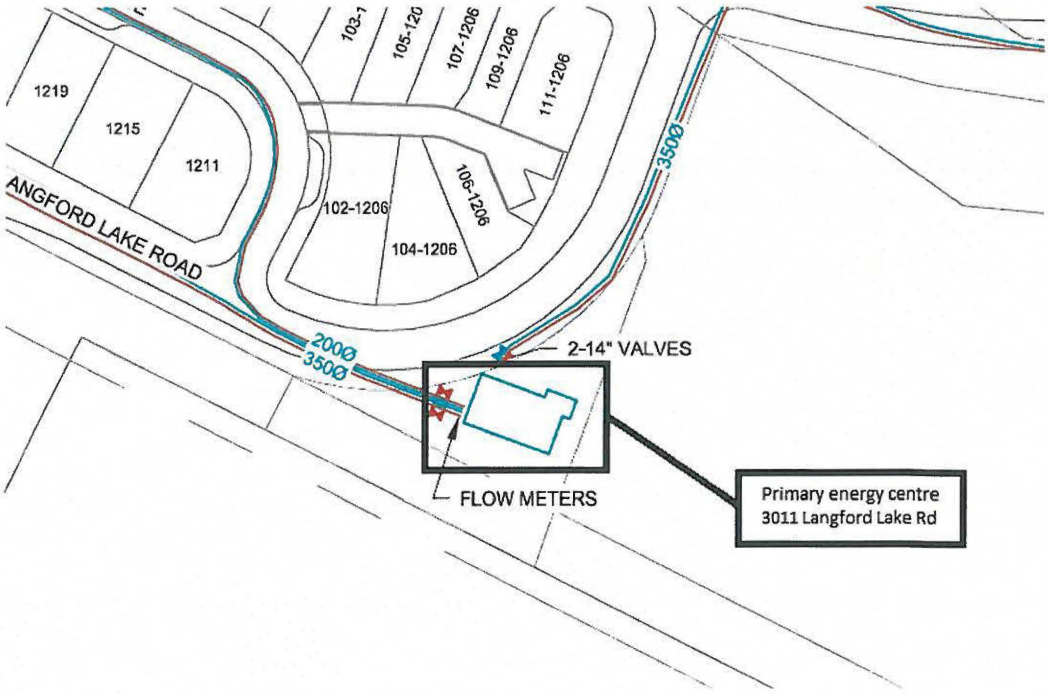
For details on development permits by phase, please see Question #8.

For the TES primary energy centre:

Address:	3011 Langford Lake Road
Building Permit #:	10-0436 (City of Langford, issued April 2010)

12. Please identify the location of the primary energy centre in the drawings supplied in Appendix B;

The primary energy centre is located at 3011 Langford Lake Road, highlighted in green on page 3 of Appendix B (of original 2018 submission) and also identified below:



SSL-Sustainable Services Ltd.
957 Langford Parkway
Victoria, BC
V9B 0A5

T: (250) 391-7260
F: (250) 391-7268
www.SSL-BC.com
info@SSL-BC.com

13. Please provide the name of the customers involved in the signing of contracts. This question requires:

i. Confirmation, or explanation otherwise, that all customer(s) sign contracts for service with SSL-Sustainable Services Ltd.

Yes, customers complete and sign an application for service, the terms of which, together with those contained in the applicable City of Langford bylaw, form the Service Agreement with SSL.

ii. Names of customer(s) which enter into a contract with the party identified in the response to (i). Please note, only the names of Strata or commercial customers are required. For residential customers, please provide the number of contracts signed;

SSL customer figures as of December 2018

Strata customers:

Owners' Strata Plan EPS494 (12 town home units)
Owners' Strata Plan EPS941 (68 condominium units)
Owners' Strata Plan EPS1719 (7 town home units)
Owners' Strata Plan EPS2379 (8 town home units)
Owners' Strata Plan EPS2380 (5 town home units)

Non-strata residential customers:

409

14. Please provide the number of customers / end-users anticipated in 5 years. If SSL does not anticipate a change in the number of customers, please state so;

At this time, we do not anticipate a change in the number of customers within the next 5 years.

Load Forecast and Analysis

15. Please provide information on the peak loads (MW) and annual loads (MWh) for DHW;

Domestic hot water loads are not recorded independently of space heating.

16. Please explain the method used to forecast the peak and annual loads at the design stage. Please provide the key assumptions and design references;

An hourly energy model was created for the TES. The model was based on the expected buildout of the community, expected customer building types, and expected energy use intensities of the customer buildings. Key assumptions include: an assumed customer building peak heating demand intensity of 13

SSL-Sustainable Services Ltd.
957 Langford Parkway
Victoria, BC
V9B 0A5

T: (250) 391-7260
F: (250) 391-7268
www.SSL-BC.com
info@SSL-BC.com

btu/sq-ft, a customer home heat pump sized for 50% of the peak building heating load, and a total of 812,000 sq-ft of customer buildings in the first two phases of the project. Hourly weather data from Victoria, BC and Esquimalt, BC weather stations from 2004 and 2002 were used as inputs to the hourly energy model.

17. Please confirm, or otherwise explain, that the TES has not been designed to meet the full load of the Westhills Community;

i. If confirmed, please explain what loads the Westhills TES has been designed to meet;

The thermal energy system has not been designed to meet the full space plus DHW heating load of the customer buildings. The peak heating load of each individual customer building varies, but generally the customer building heat pump and district energy system connection is designed to meet 50% of the peak space heating load of the customer.

Cost Estimate

18. Please provide a breakdown of the estimated capital costs according to the following categories: Equipment, Materials, Engineering / Design, Construction, Financing, Fees / Overhead, Other 'soft' costs;

Approximate TES Capital Cost

TES Utility Plants (Buildings):	$1.3M
TES Utility Plants (Equipment):	$2.5M
TES Distribution Network:	$5.1M
Residential Heat Pumps & Meters:	$2.5M
TOTAL:	$11.5M

19. Please describe the methodology for estimating Overhead and Other 'soft' costs;

As the TES has already been fully constructed, stated capital costs are based on actuals and were not estimated.

SSL-Sustainable Services Ltd.
957 Langford Parkway
Victoria, BC
V9B 0A5

T: (250) 391-7260
F: (250) 391-7268
www.SSL-BC.com
info@SSL-BC.com

20. Please provide a breakdown of the estimated annual operating costs according to the following categories: Labour, Consumables, Sustainment Capital, Admin / Taxes / Overhead, Insurance, Other (please specify);

Annual Operating Costs (approximate, current fiscal year)

Equipment and Systems R&M, Servicing:	$210,000*
TES Plant Site(s) Utility Costs:	$100,000
Insurance:	$ 10,000
Permits & Fees:	$ 15,000
Overhead/Other:	$160,000
TOTAL:	$495,000

** Parts, consumables, labour, and professional/technical services associated with maintenance, repairs, operational support, and capital replacement works for all TES assets.*

21. Please describe the methodology for estimating sustainment capital and operating Admin/Overhead;

Stated operating costs are for current budget period and based on historical actuals from several years in operation. (Note we are unfamiliar with the term "Sustainment Capital" and would need this to be better defined in order to separate such costs.)

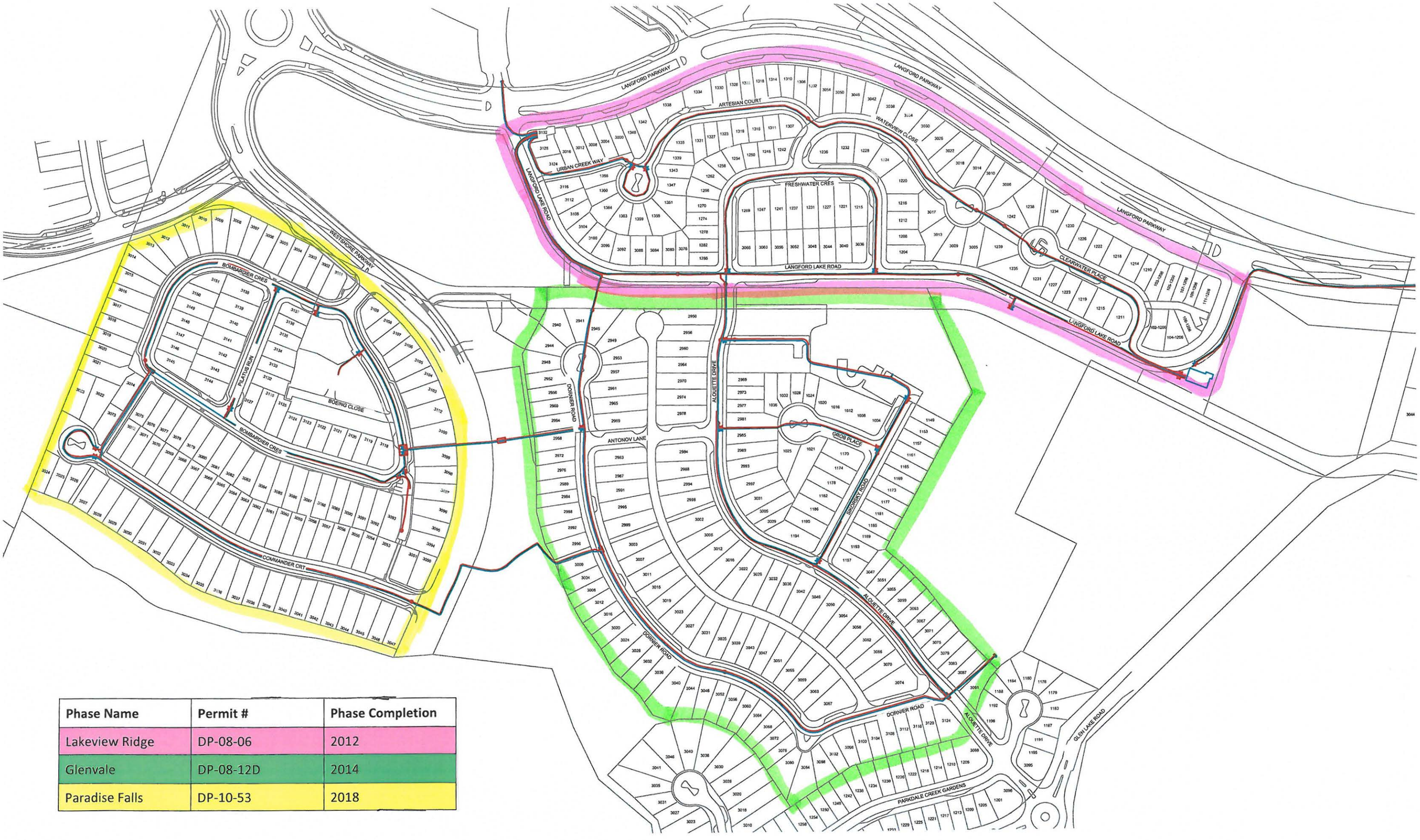
22. Please confirm, or otherwise explain, that the system was not purchased. If not confirmed, please provide the purchase price;

The system was not purchased.

Attestation Requirements

23. Please complete the Attestation Requirements on page 4 of the Registration Form. The Applicant is required to attest to the 10 statements provided below. If SSL cannot attest to any of the 10 statements, please provide an explanation. Please note, the Attestation Requirements are to be signed by the Signing Officer.

As the attestation requirements state that they are to be completed by "Stream A TES (with in-service date after 2014/08/24)" and the in-service date of our TES was several years before that, we have not completed this section.



Phase Name	Permit #	Phase Completion
Lakeview Ridge	DP-08-06	2012
Glenvale	DP-08-12D	2014
Paradise Falls	DP-10-53	2018