

THAMESWEY ENERGY LIMITED

BUSINESS PLAN 2019

Covering the Period 2019 - 2022

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1. Company Overview

Introduction

- 1.1 This business plan sets out the proposed priorities for Thameswey Energy Limited (TEL) to deliver the Thameswey Group companies' strategic objectives for the near future up to 2022.
- 1.2 The plan ensures that the focus of activity within this company is clearly aligned with those of Thameswey Limited, and ultimately with Woking Borough Council's strategic objectives for the Thameswey Group.
- 1.3 The plan refreshes the 2018 to 2021 business plan (approved by Council in December 2017). It identifies the business opportunities and priorities for investment in the near future, including the main capital projects that will require investment to enable TEL to deliver its objectives for the Council. During 2017, a business case was agreed by the Council to build a new energy station in Poole Road. There is currently no provision for capital expenditure at Sheerwater in this Plan.

Purpose

- 1.4 Thameswey Energy Ltd was established to provide a long-term strategy of sustainable energy infrastructure investment both within the borough of Woking and elsewhere, with the objective of securing reductions in carbon dioxide equivalent emissions. The company achieves this through its generation, distribution and supply of sustainable, low carbon and renewable energy to public, commercial and private domestic customers in the borough (and in Milton Keynes via its subsidiary).

Financial Requirements

- 1.5 The business is financed by way of loans and share capital.
- 1.6 TEL has the use of intellectual property owned by Thameswey Limited (TL) and is obliged to pay an annual licence fee of £1,000. At its discretion TL also charges a project fee for capital work of up to 4% of the value of the works. These fees are used to benefit the residents of the borough as TL contributes towards environmental, social and carbon dioxide equivalent emission reduction projects. Further information on the projects that have benefited from these funds is provided in the Thameswey Limited business plan.
- 1.7 The current programme of planned capital expenditure over the next three years is shown in the table below and described in Section 3 of this Business Plan. Major Capex beyond 2021 has not been identified at this stage and will be largely determined by the opportunities for new connections arising from new development activity at that time. Where reference is made to future connections to supply energy to new developments, these will be subject to planning approval and contractual negotiations.

Capital Expenditure	2018	2019	2020	2021	2022	TOTAL
SCADA	71,000	25,000	-			96,000
Victoria Way optimisation		25,000				25,000
Increased chiller capacity	19,000	275,000	-			294,000
Connection to Elizabeth House	298,000	70,000				368,000
Woking Park Optimisation	10,000	50,000				60,000
Victoria Way engine major services	-	24,004	39,052	102,081		165,137
Chertsey Road	250,000	100,000	-			350,000
Church St East 'relief ring' upgrade	100,000	-	210,000			310,000
Kings Court	131,000					131,000
Poole Road Energy Station			22,000,000			22,000,000
TOTAL	879,000	569,004	22,249,052	102,081	-	23,799,137

Current Business Position

1.8 The current business priorities for TEL are:

- Completion of phased replacement of aging primary energy assets in Woking Park
- Expansion of existing distribution infrastructure to supply new developments in the eastern half of Woking town centre
- Construction of new energy generating capacity and distribution infrastructure to supply the Victoria Square scheme and other major developments elsewhere in the town centre

Major Achievements since the last business plan

- 1.9 During 2017, Victoria Way Energy Centre and Woking Park CHP produced 8,731 MWh and 5,100 MWh respectively of heat and 5,055 MWh and 4,021 MWh of low carbon electricity. The combined energy production of these sites reduced carbon dioxide equivalent emissions by 963 tonnes (as compared to the emissions emitted in the production of an equivalent amount of grid energy).
- 1.10 TEL's solar PV installations generated 203MWh of renewable electricity. Whilst lower than 2016 this is broadly equivalent to the output in 2015 and equates to a saving in carbon emissions of 78 tonnes.
- 1.11 District heat, cooling and private wire supplies to Victoria Gate were completed and the SPACE office development in Chertsey Road was connected to the private wire network. A new electricity substation was installed to provide a power supply for the new waste processing equipment in Peacocks.
- 1.12 Work commenced on the first stages of a new district heat distribution main serving the eastern half of the town centre including proposed development sites in Church Street East and Chertsey Road, and the redevelopment of Elizabeth House. Designed as a 'relief ring', the new pipes will enable additional heat capacity to be distributed in this part of the town centre whilst maximising the output potential of the generating plant at Victoria Way energy centre.
- 1.13 A major re-design of the Poole Road energy station scheme was carried out following acquisition of adjoining land at Format House. The revised scheme was taken forward through planning, with the aim of commencing work on site early in 2019.
- 1.14 Work commenced on the first phases of a new power distribution network that will serve the Victoria Square scheme along with other major developments in the town centre. Construction of a new substation at Dukes Court was also completed as the first phase of

a pair of high voltage network interconnectors that will enable automated switching between the existing and new town centre private wire networks.

Company Ownership & Governance

1.15 Thameswey Energy Ltd is a private Limited Company registered in the United Kingdom and is a 100% subsidiary of Thameswey Limited (the holding company of the Thameswey Group), which is in turn solely owned by Woking Borough Council. TEL has a wholly owned subsidiary company, Thameswey Central Milton Keynes Limited (TCMK) which provides embedded generation facilities in the Central Milton Keynes area. Both companies have separate business plans and their results are not incorporated into the results of TEL.

1.16 The current board of Directors is set out below:

Barry Maunders	Independent Director (Chairman)
William Prescott	Independent Director
Peter Bryant	Officer Director
Douglas Spinks	Officer Director
Ayesha Azad	Councillor Director

Significant Assets

1.17 The Victoria Way Energy Centre has been operational since 2001. The energy station includes a 1.3 MWe Deutz gas fired Combined Heat & Power (CHP) engine with two 1.2MW gas boilers, two absorption chillers and a thermal store to provide security of heat supply. This energy station provides heat, cooling and power to a number of buildings within the town centre. Distribution assets include district heat and cooling mains and an extensive 11,000v mains distribution system and HV substations with a second HV network currently under construction.

1.18 TEL also owns and operates a number of sites previously developed by WBC. The largest of these installations is at Woking Park and includes a 0.84 MWe Jenbacher CHP engine. Other sites include a number of domestic sites with small scale CHP installations and over 620kWp of solar photovoltaic installations in the Borough. See Appendix 1.

2. Industry Outlook and Business Opportunity

Industry Outlook

2.1 Government support for the growth in decentralised energy is continuing with the roll out of the financial support for heat networks (Heat Networks Investment Project or 'HNIP'). The scheme will be open applicants in January 2019 until March 2022. Further guidance, including the qualifying criteria, is expected before the end of 2018.

2.2 The effects of Brexit (both positive and negative) will continue to impact on the industry. A heavy reliance on parts and equipment supplied by manufacturers based in continental Europe may impact on costs and charges. Where possible, UK-sourced components and equipment is now being used to reduce exposure to future price uncertainties.

2.3 The introduction of a Government cap on standard variable and default energy tariffs will take effect from the end of 2018 until 2020. As TEL's domestic electricity tariffs are currently adjusted in the first quarter of each year and benchmarked against a sample of

suppliers' standard variable tariffs, the impact of this cap has yet to be observed. If, as expected, suppliers start to phase out standard variable tariffs, TEL may need to adjust its price setting mechanism.

- 2.4 Reductions are expected over the next two years in payments made by the National Grid to small 'embedded generators' for contributing to grid supplies at times of shortage. These will impact on the payments received by Thameswey for exported power generated during winter triads. However, the introduction of 'capacity market' payments is intended to help offset the loss of triad income and TEL will seek to enter this market.
- 2.5 There is significant growth in development of power storage technologies and new markets are emerging to support the electricity grid and local networks though fast-response reserve power. This sector is expected to continue to expand as growth in scale and competition among suppliers brings down the capital costs.
- 2.6 Industry support is growing for a drive towards lower temperature, lower loss systems with greater use of 'smart' technology to provide performance feedback between a network and individual customer installations. These are often described as Third (or Fourth) Generation systems and offer a number of potential advantages including greater overall efficiency and integration of alternative heat generating technologies such as heat pumps.

The Business Opportunity

- 2.7 The growth in new development in Woking presents opportunities to connect new customers to TEL's existing networks and develop new generating and supply capacity. This is being progressed simultaneously through two routes:
 - Extension of the distribution infrastructure connected to Victoria Way energy station to increase the supply capacity available in the Church Street East/Chertsey Road areas.
 - The development of a new station at Poole Road, with networks serving Victoria Square and other major developments in the west of the town centre. In the longer-term TEL will seek to extend the Poole Road new network to development sites south of the railway.
- 2.8 As each network grows the opportunity will arise to interconnect the two networks and provide additional operational resilience and capacity throughout the town centre. The first phase of interconnection is underway with the construction of switching substations to link the existing ('Victoria Way') private wire network with a new network that is being built to supply Victoria Square from Poole Road energy centre. The Poole Road energy centre will also provide the opportunity for TEL to diversify its generating capacity with the potential to accommodate alternative and renewable generating and storage technologies to help secure further sequential carbon reductions in the energy supplied by the company. Funding through the new HNIP scheme will be sought to support further extension of TEL's networks in the town centre, along with opportunities to introduce lower carbon technologies.
- 2.9 Sheerwater Regeneration provides a major opportunity for TEL to supply low carbon energy to a major new community outside of the town centre. As the early phases of the development include non-residential uses, these will be capable of providing 'anchor load' demand which can be extended to serve some of the residential phases. The infrastructure and services designs for Sheerwater will include assessment of energy generating technologies that will ensure long term carbon savings. Note, there is currently

no planned expenditure at Sheerwater until the development plans for the scheme are agreed.

- 2.10 The introduction of battery storage technologies ‘behind the meter’ alongside existing and new CHP and solar power generation will be explored in TEL’s primary generating stations and also its PV sites. Initial discussions have commenced with a single supplier to test the economic and technical proof of concept, with a view to deployment during the business plan period.
- 2.11 The emergence of niche or local licensed energy suppliers and independent distribution network operators (IDNOs) presents an opportunity for Thameswey to enter a growing market that challenges the large utility companies. This may offer Thameswey opportunities to manage regulatory risks as it grows the number of directly supplied customers, whilst also expanding its customer base beyond those physically connected to its networks. Further exploration of this business model will be carried out during the Business Plan period to understand the potential benefits and risks of this approach to business expansion.
- 2.12 Technological developments are emerging that will enable ‘microgrid’ systems to operate between individual customers. These have the potential to offer numerous benefits to suppliers and customers through time-of-use tariffs and demand-side-management that will help reduce peak loads on a network (and in turn enable more customers to be connected without investment in additional generating or distribution infrastructure). Whilst the technology is rapidly advancing, the regulatory consents required by microgrids are not yet in place.
- 2.13 The Council’s adopted strategy for sustainable development (‘Woking 2050’) provides a number of opportunities for TEL to assist in the delivery of the Council’s sustainable development objectives. These include a number of areas where TEL is already actively delivering outcomes (for example providing renewable and low carbon energy, promoting energy efficient homes and initiatives to help reduce fuel poverty), as well as other areas where new opportunities exist for the company to contribute to project delivery (such as helping to provide electric vehicle charging infrastructure and assisting local businesses to switch to lower carbon energy supplies).
- 2.14 Thameswey’s housing stock comprises over 450 properties and have limited renewable energy supply. These provide an opportunity for TEL (and Thameswey Solar Ltd.) to increase its generation and supply of renewable energy through the installation of small scale solar PV and/or solar thermal energy on Thameswey’s own stock.

Investment strategy for Woking town centre

- 2.15 The investment strategy adopted in the 2018-2021 Business Plan will be continued and will focus on meeting the growth in energy demand arising from the planned growth and redevelopment in Woking town. This will be delivered through investment in upgrading and extending existing assets, building new energy generating plant and distribution infrastructure. The three priorities for investment to achieve this:
 - 1) Optimising the performance of existing assets;
 - 2) Increasing capacity to supply new customers through additional generating assets and extending TEL’s distribution infrastructure;
 - 3) Planning for replacement of aging assets with new, lower carbon and/or renewable energy technologies.

- 2.16 The Victoria Way town centre energy station will reach 20 years in operation during the Business Plan period. During 2017 work started on a number of measures to improve efficiency of existing plant and increase supply capacity from existing energy generation and distribution assets. Additional capacity to generate chilling is also planned as this currently has very limited spare capacity. This work is expected to continue into 2019, with reduced expenditure thereafter.
- 2.17 The investment strategy assumes continued opportunities for growth through new development coming forward in the town centre. A number of schemes located close to TEL's existing networks in the east of the town have sought planning consent and other major redevelopments are anticipated in the current Business Plan period near to Church Street East. These connections will be subject to individual investment appraisal, at which time their contribution to the cost of connection will be quantified.
- 2.18 Construction of a new energy centre in Poole Road will commence during the Business Plan period, along with new heat distribution networks to serve the Victoria Square scheme as well as other major new customers in the western half of the town centre (and south of the railway).
- 2.19 As the 'headroom' of capacity available to new customers at Victoria Way energy centre to meet new customer loads decreases, the opportunity will be available to supply new customers via inter-connection of the new and existing district heat and cooling networks.
- 2.20 In addition to meeting anticipated growth in energy demand, TEL is considering how it generates the energy it supplies in future. TEL's district energy networks are currently wholly dependent on natural gas as the primary fuel to generate heat, cooling and power. Future changes in the way the UK's primary energy is supplied may impact on the environmental benefits and costs of energy supplied by TEL. Recent years have seen a steady reduction in the carbon intensity of the UK's electricity mix supplied over the grid with the increase in wind and solar power and switch away from coal-fired power stations. These movements in the energy mix of grid electricity directly impact on the relative carbon savings provided through gas fired CHP. In the short-term TEL will consider opportunities to reduce the carbon intensity of its energy supplies through measures such as purchasing 'green gas' certificates as part of its primary energy. Longer term measures include ensuring the Poole Road energy centre is designed to enable greater flexibility in the mix of primary energy used and energy generated.

3. The Business Model

Sources of Revenue

- 3.1 TEL's revenue in 2016 & 2017 from energy sales and energy service charges is summarised in the table below.

	2016	2017
	<i>Actual</i>	<i>Actual</i>
	£	£
Electricity	967,918	999,217
Electricity Export	130,105	180,437
Triad Income	12,584	14,000
Heat	428,500	456,193
Cooling	114,051	75,490
Standing Charges	222,565	320,749
Admin Charges	16,999	20,309
Energy Service Charge	1,366,287	1,383,789
Sale of ROCs	6,615	8,679
Feed in Tariff	19,554	17,023
Plant Maint Recharge	0	71,273
Non Trading Income	0	298,594
	3,285,177	3,845,753

Major Operational Costs

- 3.2 The most significant costs that the company incurs are primary energy costs (natural gas and electricity import) and operation and maintenance (O&M) costs.
- 3.3 Following a period of relative stability in primary energy costs during 2017, greater volatility in prices returned in 2018. However, as TEL's supply contracts for commercial customers link the energy tariffs charged to customers using a formula based on RPI and the UK natural gas price index this has negatively impacted on revenues from energy sales. Whilst this pricing formula provides TEL's business model with some protection against volatility in wholesale energy prices, the net effect of falling wholesale energy prices is adverse for TEL.

Operational Plan

- 3.4 The Operational Plan will be further developed over the course of the Business Plan to achieve the following outcomes:
- Installation of automatic meter reading (AMR) to replace the last remaining manually read meters, along with integration of meter data into the Ista system
 - Control of planned maintenance regimes using QFM software for Victoria Way and Woking Park energy centres, and (once operational) Poole Road

- Growth in the number of customer accounts from connection of major new developments in Woking town centre (managed through re-organisation and expansion of the Customer Services team in TSCL)
- 3.5 During the Business Plan period TEL intends to obtain membership of the Heat Trust which will require the adoption of new and enhanced customer care practices and operating procedures. These will be monitored by the Heat Trust through its twice-yearly reporting requirements and member audits. Although not obligatory this membership will address the recommendation of the recent Competition and Markets Authority report into heat networks.

Capital Investment

- 3.6 Capital expenditure during 2018 has focused on continued plant refurbishment at Victoria Way energy centre and development of a new SCADA (control) system for Victoria Way and Woking Park, along with the installation of new heat and power distribution infrastructure in the eastern half of the town centre.
- 3.7 During 2018 and 2019 planned capital expenditure at the Victoria Way energy centre includes the installation of additional chiller capacity to meet increased cooling demand arising from new connections. A budget sum of £294,000 has been included in the capex investment plan which will be firmed up following further technical appraisal.
- 3.8 Investment in further expansion of the network over the next 2-3 years comprises connection to new developments in the eastern half of the town centre, including Thameswey's sites at 121 Chertsey Road and Elizabeth House. The investment required by TEL for each new proposal that comes forward in the town centre will be modelled and considered on its own merits. The total estimated capital costs for new connections are included in the investment plan. Contributions towards these costs will be sought from developers during commercial negotiations.
- 3.9 Work will continue during 2019 to provide new HV (high voltage) private wire network capacity to serve the Victoria Square scheme and other new developments throughout the town centre. This will also provide the opportunity to provide future reinforcement to the existing town centre private wire network.
- 3.10 Investment in the Poole Road energy centre and new distribution networks has been approved by the TEL and TL Boards and Woking Borough Council. The capex for this will include a contribution by Victoria Square Woking Ltd (VSWL).
- 3.11 The current business plan (including Poole Road) forecasts an average annual rate of return of 5.2% and in the future a minimum of 4.5% has been adopted for investment appraisal models for major capital expenditure. This is in line with current commercial expectations.

Assumptions and Critical Factors in Model

- 3.12 TEL has a financial model which has been used to make long term financial projections. The model is updated each year to reflect the previous year's activity and any updates on market forecasts. The model also takes into account new projects / connections, engine running strategies and capacity of the engines.
- 3.13 The model assumes that inflation will run at 2.0% per annum for the business plan period. In practice short term inflation rates will vary. Increased inflation will provide an

improvement in the return for the company due to increasing revenues and margins. As referred to above commercial customer prices are based on the gas price index and inflation, thereby reducing risk to the business.

- 3.14 The nature of the Council's investment is long term. The established business has an underlying sound foundation with a good customer base and considerable opportunity for growth. The business plan covers the financial period 2019 to 2022 in detail, as this can be accurately predicted. However, the economic model has been extrapolated into the future to facilitate the established business including Poole Road energy station.

4. Financial Plan

Finance Structure

Appendix 2 shows the Finance Structure of TEL

- 4.1 TEL is financed by both share capital and loans. TL (ultimately WBC) has a nominal total of £5,050,450 in share capital finance in TEL, £1,110,000 of this share capital was used by TEL to invest in its subsidiary TCMK.
- 4.2 WBC charges TEL a margin on its loan rates which is used for the benefit of the Council. In 2018 the loan will contribute approximately £380,000 to WBC in the form of loan margin.

Shareholder Return on Investment

- 4.3 Average annual return on investment has been calculated up to 2035 as 3.5% in the 2016 business plan based on historical connections. New connections are calculated by individual business cases and are required to meet a minimum of 4.5%.
- 4.4 The addition of the new energy station in Poole Road is expected to return the business to profit by 2025, and accumulated profit by 2042. Dividends will be paid to WBC from 2043. Shareholder return in 2069 delivers 5.2%.

Appendix 3 shows the other benefits to WBC.

Profit & Loss Account

- 4.5 The profit & loss account has 2017 actual data as a comparator, against 2018 expected overrun, and a budget for 2019 to 2022.
- 4.6 The budget has been based on historical costs, expected inflation and modelled revenue and costs. TEL has a good level of confidence in the budget. It should be noted that increases in the gas price index lead to increases in the prices charged to commercial customers with prices calculated on a monthly basis, this helps to reduce financial risk to TEL.
- 4.7 Administration costs in 2017 were high due to one of costs relating to an ISTA project management fee and abortive connections.
- 4.8 Amortisations of grants from connections are written off over the contract term, to match capital investment depreciation.

- 4.9 Poole Road income and associated costs are expected to commence in 2020, although steady state is not expected until 2028.
- 4.10 The plan shows a fluctuating profit (before interest, tax and depreciation) with the introduction of Poole Road, the business will not produce consistent profits until connections are complete, and a steady income and cost base is achieved.
- 4.11 The business will return to producing an annual profit in 2025.

Balance Sheet

- 4.12 Capital expenditure increases in 2020 to reflect Poole Road energy station.
- 4.13 Loan requirements from WBC have been agreed for Poole Road, and no additional funding is required during the business plan period. However, if the customer base increases, potential funding may be required to support infrastructure investment. The loan required for Poole Road has been reduced from £25M to £21M, due to a reduction in the commercial space being provided.

Year	Funding Requirement	Purpose
2018	£0	No Funding Required
2019	£0M	Poole Road Development
2020	£20M	Poole Road Development
2021	£1M	Poole Road Development
2022	£0M	No Funding Required

Appendix 1: Sites operated by TEL

Location	TEL Facilities	Site owner
Victoria Way Energy Station	CHP	TEL
Woking Leisure Centre/Pool in the Park	CHP / Photovoltaics	WBC
Broadway House / The Vyne	CHP / Photovoltaics	WBC
Brockhill	CHP / Photovoltaics	WBC
Bunyard Drive	CHP	WBC
Ferney Court*	Photovoltaics	WBC
Hampton Close (Cranmer and Wolesley Courts)	CHP	Thameswey Housing Ltd
Nightingale Court *	Photovoltaics	WBC
Nottingham Court	Photovoltaics	WBC
Priors Croft *	CHP / Photovoltaics	WBC
Stream Close (St. Marys) *	CHP / Photovoltaics	WBC
Sunnyside *	Photovoltaics	WBC
Tudor Court	CHP	Greenoak Housing
Wesco Court *	Photovoltaics	WBC
Woodlands House	CHP /	WBC
(Parkview) *	Photovoltaics	

*WBC sites with plant rooms operated by TEL

Appendix 2: TEL Finance Structure

Share Capital Summary	Total Share Capital
Date	£
01.06.2000	720,000
01.02.2002	920,000
01.10.2003	800,450
31.12.2005*	1,110,000
30.12.2011	500,000
30.07.2012	500,000
24.12.2012	500,000
Total Share Capital as at 31.12.2018	5,050,450

* Invested in TCMK

Appendix 3: Benefits to WBC

Description	2017	2018	2019
Net Interest Margin	£399,849	£380,686	£366,695
Carbon dioxide Emission Savings (tonnes)	1,041	TBC	TBC
Payment of NNDR	£19,209	£19,560	£19,920
Assist WBC in its Climate Change Strategy			

Notes:

Capital Project Fees will be payable to TL in 2019 as connections under construction are completed.

Carbon dioxide emission savings calculated on basis of CHP in Victoria Way Energy Centre, Woking Park and TEL PV installations.

End of Business Plan