

To: **Overview and Scrutiny Commission**
4 November 2021

Utility Costs
Executive Director of Delivery

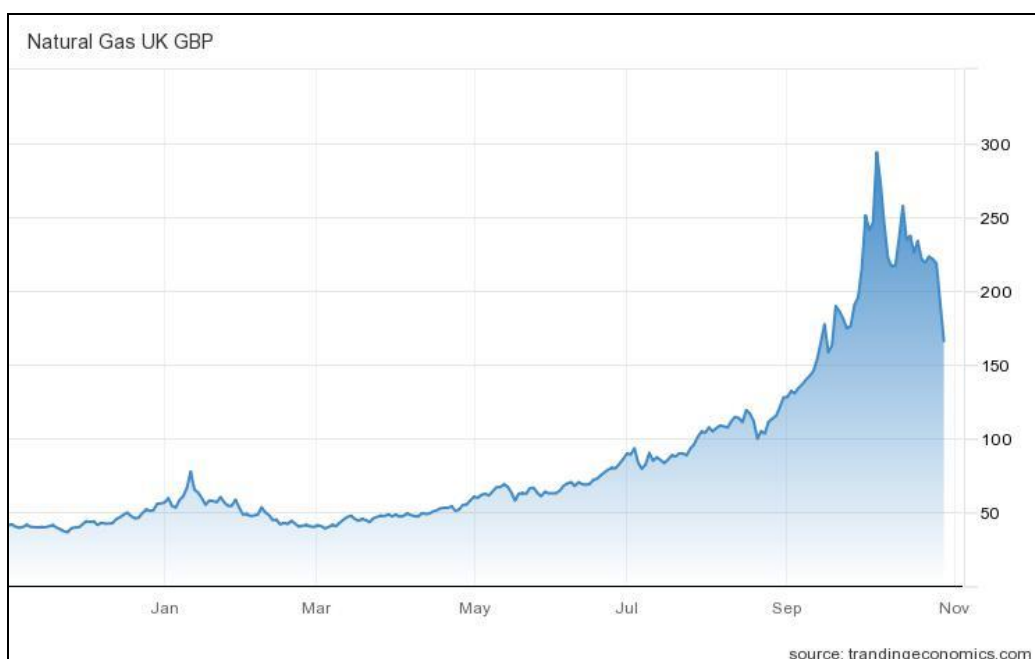
1 Introduction

- 1.1 The purpose of this report is to give insight into the current high energy prices.
- 1.2 Gas and electricity prices have been reaching new highs over the past few months. Prices have been on the increase since the start of the year, but the pace of change has really accelerated recently due to low storage stocks, supply side concerns and rallying global gas prices, that are driving the gas market strength in Europe. This is balanced against disappointing renewables output, poor nuclear availability, disruption to Liquid Natural Gas (LNG) imports and a fire at the UK end of the main energy interconnector with France. These factors have created the bullish energy market that is now impacting on the UK energy market.

2 Supporting Information

- 2.1 UK is one of Europe's biggest users of natural gas – 40% of UK electricity is generated by gas turbines, the rest comes from Wind, Solar, Nuclear, interconnectors, coal, and hydroelectricity. 85% of homes use natural gas central heating meaning the UK has one of the best gas networks infrastructure. However, the graph below shows the recent rapid increase in UK gas prices, because of the over dependency for gas. In July 2021 the price of natural gas was 77.69p/Thm but by October this had risen to 294.1p/Thm an increase of over 280%. Within the previous three months the UK has seen numerous gas price records broken, for both near-term, monthly, and upcoming seasonal contracts

Thm – Therm(UK).



Graph 1. Gas Prices over the last 12 months, price per GBp/Therm

2.2 The table below shows the wholesale price at the start of each month in 2021. In General, over the last ten years the gas price have remained between 10p/Thm in May 2020 to 78p/Thm in September 2018. However, the UK energy market is a highly volatile futures commodity market with all the risks inherent with such trading. Speculative trading has a significant impact on day-to-day prices, but the underlying fragility is primarily caused by inelastic demand and a lack of flexibility in supply capacity. Unpredictable world events have impacted greatly on market confidence and hence cause wild price “spikes” last four months.

2021	GBp/Thm	GBp/kWh	Swing
January	58.47	1.9951	-
February	47.61	1.6245	-18.6%
March	42.60	1.4536	-10.5%
April	46.78	1.5962	9.8%
May	62.65	2.1377	33.9%
June	57.64	1.9668	-8.0%
July	77.69	2.6509	34.8%
August	91.05	3.1068	17.2%
September	116.9	3.9888	28.4%
October	294.1	10.0351	151.6%
November	166.5	5.6812	-43.4%

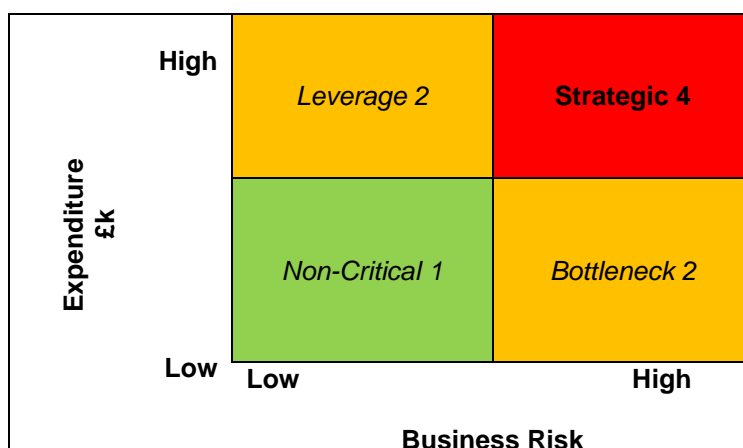
Table 1. Gas prices at the beginning of each month in in 2021.

One Therm (Thm) is equivalent to 29.307kWh.

2.3 The structure of the UK electricity and gas markets are broadly similar with an originating producer or generator supplying energy via a transportation network to customers and a supplier managing the commercial interfaces. The transmission network price is regulated and distinct from the (competitive) generation and production element which drives the majority of the cost. The ultimate supplier’s margin, covering the customer-facing commercial interfaces (i.e. billing etc.) is very small. Thus, competition between suppliers on price has become almost irrelevant – quality and accuracy of billing services is far more important – and the cost focus has switched to the precise timing of individual buying decisions.

2.4 Best Practice is now widely recognised as involving hedging ie buying separate tranches of energy over a long period – typically at least 12 months - for delivery from a future date (e.g. 1 April next year). Central Government has made huge efforts over recent years to persuade all public authorities to move to this flexible approach, based on aggregation of demand into huge portfolios managed by expert buying organisations, such as the Crown Commercial Service (CCS), Yorkshire Purchasing Organisation (YPO) or London And South East Region (LASER).

2.5 How important is energy to the council?



With a total spend of circa £2.5m, a high degree of business continuity risk associated with supply availability and financial risk associated with highly volatile markets (see above), energy must be a strategic risk item.

Energy Market effect on Bracknell Forest Council?

- 2.6 This review shows that energy & water supply are strategically important for the Council. The scale of our demand and nature of our requirement in isolation is reasonably attractive to suppliers. That said, the council uses the enormous collective buying power of national Framework agreements. Using the Crown Commercial Services (CCS) and London and South East Region (LASER) frameworks allows the council to purchase its Gas, Electricity, and Water at much lower rates than it would achieve by buying on its own account.
- 2.7 Energy purchasing best practice involves hedging i.e., buying separate tranches of energy over a long period – typically at least over 12 months in advance- for delivery from a future date (e.g., 1 April next year). Central Government has made huge efforts over recent years to persuade all public authorities to move to this approach, based on aggregation of demand into huge portfolios managed by expert buying organisations, such as the CCS, or LASER.
- 2.8 The council's current contract arrangements for electricity and gas are provided through the CCS Framework agreement, up to 2025 for supply of:
- Gas (mains) through Total Energies (**TE**) – Total Energies SE is a French multinational integrated oil and gas company founded in 1924 and one of the seven "supermajor" oil companies.
 - Half Hourly Electricity (large, metered sites) and unmetered (street lighting) through Électricité de France (**EDF**) - EDF Energy is a British integrated energy company, wholly owned by the French state, with operations spanning electricity generation and the sale of natural gas and electricity to businesses throughout the United Kingdom and one of the Six 'large' UK energy companies.

- Non-Half Hourly (smaller meters) again with EDF Energy.

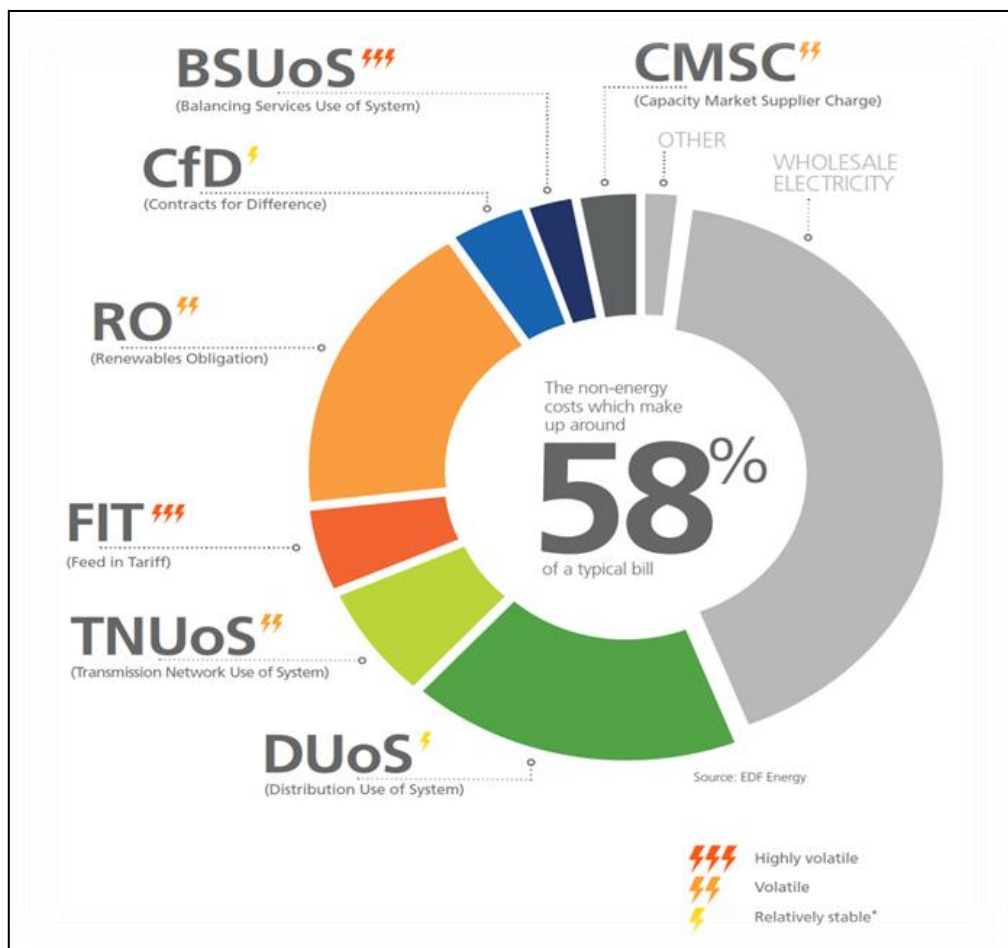
2.9 As from April 2021, all the council's Electricity is on Renewable for Business - Carbon Neutral Energy tariff.

2.10 The table below shows the average unit rate price change per kWh for gas and electricity prices from 2019 to 2022 prices. Trend is upward.

	2019	2020	2021	2022*
Gas pence/kWh	1.94p	2.07p	2.52p*	2.82p*
HH Electric pence/kWh	09.88p day, 05.81p night	12.797p day, 9.94p night	14.63p day, 10.91p night*	16.68p day, 12.22p night*

Table 2. Average kWh unit rates for gas and electricity between 2019 to 2022 *Estimated CCS Basket Average Rates

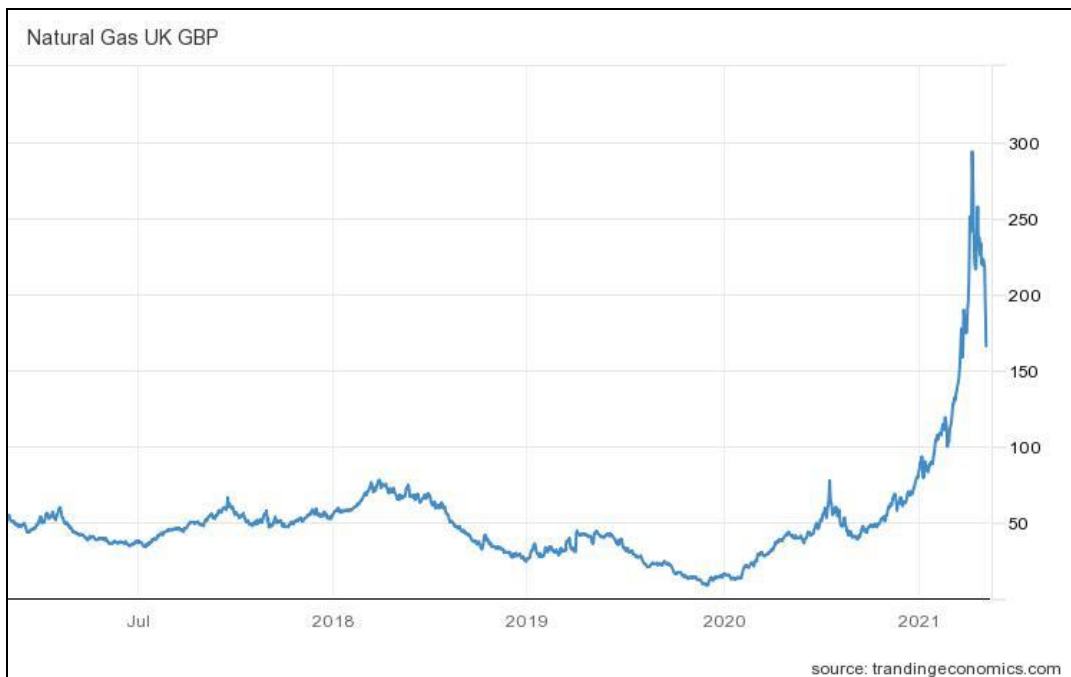
2.11 Comparatively over the last ten years, there has been a swing of 20% between actual energy cost and other charges in the electricity industry. Today the energy component accounts for 42% of the invoice, whilst the other 58% covers all other charges; see pie diagram below showing a swing towards other charges.



See

Appendix 1 for explanation to each of these non-energy charges.

- 2.12 Over the last five year there has been a continuous rise and fall between 78GBP/Thm and 10GBP/Thm. Until now July 2021, when the demand for gas became unprecedented as economies started to trade and open after the Covid 19 pandemic. See Graph 2 below.



Graph 2. Gas price over the last five years

- 2.13 Current contract arrangement for water is through our Framework agreement with LASER up to 2025 for supply of:
- Water through Advance Demand Side Management (ADSM) - Advanced Demand Side Management Ltd.
- 2.14 The Council purchases its utilities via its framework providers (2.4 above). All the council's supplies are at a 12-month fixed rate; therefore, we have mitigated the majority of the impact of the current higher prices for our immediate energy costs. For year 2022-23 CCS has already purchased 80% of volume in between April 2021 and July 2021 hence, BFC have not been completely exposed by these recent sudden increases in the energy price. Otherwise, we may have been exposed to increases in the region of 40% (£1,067,200).
- 2.15 The year on year in costs between 2019-22 is related to good purchasing windows. Buying small volumes of energy whilst the market is downward/falling. This spreads the risk of any elastic event or spikes.

3

3.1 Risk Mitigation plan

- Prices for year 2022-23 are presently projected to be up 14% (£316,000) higher than our current prices – we therefore need to reevaluate our energy budget for 2022-23 and begin to reduce energy use and generate own energy

- We can reduce business risk by on-site renewable energy generation and increase future energy security. Technologies such as Solar, Fuel Cell, CHP, Heat Pumps, Biomass and Battery Storage are already in use and these technologies need strategic further exploration to reduce our reliance on the grid supply.
- Use gas and electricity as efficiently as possible this winter and keep recording monthly meter reads. This will help in keeping the costs of managing our daily gas demands as low as possible. Put into place small energy efficiency measures.
- There are some good opportunities long-term to create localised energy generation with large scale solar farms, Solar canopy over car parks, fuel cell power stations, local energy centres and/or battery storage systems benefiting from either power purchase agreements, demand side response schemes, electric vehicle charging or Renewable Obligation Certificates.

3.2 Risk Analysis

The following risks and mitigation measures have been identified:

RISK	ASSESSMENT	MITIGATION
Budgetary uncertainty	2	Fixed Purchases
Uncertain Energy Market	3	Invest in self-generation
Equipment failure	3	Less if PPM in place
Supply uncertainty	1	Part of Large Consortium
PPM failures	2	Forward Planning
Increase in non-energy tariffs (CCL, Fits, Duos,)	4	Invest in Renewables
		Risk
	1	Low
	2	Medium low
	3	Medium high
	4	High

PPM – Planned Preventative Maintenance

CCL – Climate Change Levy

Fits – Feed in Tariffs

3.3 The following Council Medium Term Objectives are supported by this category:

- MTO Priority Two: Protecting and Enhancing our Environment
- MTO Priority: Provide Value for Money

Carbon Management Plan

- 3.4 This report has highlighted some of the technologies used to reduce the consumption as well as generating energy through renewables. This requires further report on the Carbon Management Plan to give a more thorough analysis of energy use and emissions.

4 Consultation and Other Considerations

Legal Advice

4.1

Financial Advice

4.2

Equalities Impact Assessment

- 4.3 Nothing in this report requires an EqlA to be undertaken.

Strategic Risk Management Issues

- 4.4 Nothing to report

Climate Change Implications

- 4.5 This information report highlights the actions that the council has taken to address Co2 emissions from the use of energy by the council. The report confirms that the council gas and electricity purchases have taken Co2 into account and an appropriate tariff selected to enable the council to be carbon neutral, as from April 2021 council electricity is Renewable for Business.
- 4.6 The Councils has for many years reduced the energy demand through energy efficiency, self-generation, and training. The Current electricity purchase is on Business for green, a carbon neutral sourced energy. Appendix 2 shows in more details the energy, cost, and emissions per some category in BFC portfolio.
- 4.7 Council's success story is the street lighting project. A saving of 64% from the 2015/16 year, this is the continual programme of installing LED streetlights with controls. Another fact derived from the table below is the UK has decarbonised the grid by 50% during the same time by introducing more and more renewable energy sources.

Year	Total (Annual) kWh	Saving to base in 2015/16	Emission Factor (kg/kWh)	Decarbonisation of the grid from base in 2015/16	Total (Annual) tonnes CO ₂
2021/22	2,268,774	63.77%	0.22876	53.91%	519
2020/21	2,233,975	64.32%	0.25091	49.45%	561
2019/20	2,421,196	61.33%	0.27511	44.57%	666
2018/19	3,412,604	45.50%	0.30482	38.59%	1,040
2017/18	4,279,530	31.66%	0.38146	23.15%	1,632
2016/17	6,252,595	0.15%	0.44662	10.02%	2,793
2015/16	6,261,869	-	0.49636	-	3,108

Table 3. BFC Street Light carbon dioxide and kWh's reduction since 2015/16

- 4.8 The Council has also invested in Solar Photovoltaics/Thermal, Ground/Air Source Heat Pumps, Biomass boilers, Combined Heat and Power units, Voltage optimising, Variable speed drives, Controls, and Insulation to reduce the impact of climate change.

Background Papers

None

Contact for further information

Hash Patel - Energy & Services Manager- 01344 355195

Hash.patel@bracknell-forest.gov.uk

Kamay Toor, Assistant Director Property – 01344 355183

Kamay.toor@bracknell-forest.gov.uk

Appendix 1

Non Energy Charges

Item		What it Covers	Impact on Bills
CMSC	CAPACITY MARKET SUPPLIER CHARGE (CMSC)	The Capacity Market forms a part of the Government's Electricity Market Reform initiative. It acts as a mechanism designed to: • ensure sufficient reliable capacity is always available by providing payments to generators which seek to encourage investment in new capacity or for existing capacity to remain open • to support the development of more active demand management in the electricity market.	It is charged on consumption during 'periods of high demand', defined as between 4pm and 7pm workdays from the start of November to the end of February for the relevant capacity year.
CfD	CONTRACTS FOR DIFFERENCE	CfD is a financial obligation on Suppliers to support low carbon electricity generators. The degree of support they must provide is determined by CfD contracts offered to generators by Government and by the volume of electricity those generators generate. The monies collected from the CfD charge on energy users are ultimately distributed to low carbon electricity projects with generating capacities of 5 MW and upwards. Eventually the CfD scheme will replace the RO scheme, but the two are going to operate in parallel for an extended time. Generation capacity may only be supported under the RO or the CfD scheme, not both.	This is a new cost that is expected to grow.
RO	RENEWABLES OBLIGATION	The RO is a financial obligation on Suppliers to support renewable electricity generators. The degree of support they must provide is set out by the government each year. The monies collected from the RO charge on energy users are ultimately distributed to large-scale renewable electricity projects and also certain small-scale projects. The RO scheme is due to close to new generators as of April 2017, however it will continue to provide support up until 2037 to generators that have joined the scheme. Generation capacity may only be supported under the RO or the CfD scheme, not both.	This is currently one of the largest non-energy costs.
TNUoS	TRANSMISSION NETWORK USE OF SYSTEM	TNUoS charges are levied by transmission companies to carry electricity from power stations through overhead high voltage lines to the local distribution networks. These charges are used to fund the maintenance and upgrading of the transmission network. TNUoS charges vary by region and are controlled through price controls administered by Ofgem.	TNUoS is the third largest non-energy cost contributor of a business electricity bill. Demand users of the transmission network pay the majority of share of TNUoS costs that is required by Transmission Operators.

DUoS	DISTRIBUTION USE OF SYSTEM	The cost of transporting electricity from the transmission network through the local area distribution networks to business and domestic properties	This is the largest non-energy cost. Charges vary considerably by region. The lowest are in London (around £10/MWh) and the highest are in the Southwest (around £35/MWh).
BSUoS	BALANCING SERVICES USE OF SYSTEM	National Grid needs to balance the electricity system every second of the day, ensuring that total generation output exactly matches the electricity demand requirement, making sure there is no surplus or deficits of generation at any time. In order to do this, National Grid pays generators and/or business energy users to increase or decrease power.	It should be noted that the cost is incurred in each half hour, so the actual charge depends on the actual within day consumption.
FIT	FEED-IN TARIFF	The FIT is a charge on suppliers to fund and promote the uptake of small-scale renewable electricity generator projects in the UK, such as solar panels on people's houses.	This scheme is typically one of the smaller non-energy cost components of a business electricity bill.

Appendix 2

Energy Consumption, Cost and Emissions per year.

** Estimated data

		2019-20			2020-21			2021-22			2022-23		
		KWh	Cost	Co2 Tonnes	KWh	Cost	Co2 Tonnes	KWh**	Cost**	Co2 Tonnes**	KWh	Cost**	Co2 Tonnes**
Electricity	Corporate	3,613,308	£ 630,677	994	2,989,971	£ 533,874	750	2,750,000	£ 481,448	0	3,000,000	£ 548,851	0
	Schools	5,828,894	£ 1,000,846	1,604	4,721,471	£ 808,165	1,185	4,500,000	£ 802,414	0	5,000,000	£ 914,752	0
	Streetlights	2,421,196	£ 390,323	666	2,233,975	£ 434,807	561	2,268,774	£ 334,642	0	2,250,056	£ 381,492	0
Per site	GarthHill College	1,159,401	£ 208,144	319	755,831	£ 137,472	190	817,220	£ 146,702	0	817,220	£ 167,240	0
	Time Square	859,238	£ 151,390	236	733,253	£ 129,059	184	732,412	£ 123,842	0	732,412	£ 141,180	0
	Car Parks	540,748	£ 91,520	149	444,234	£ 73,888	111	309,395	£ 49,904	0	329,395	£ 56,891	0
	Crematorium	228,306	£ 41,546	63	204,956	£ 37,387	51	225,243	£ 41,984	0	205,741	£ 47,862	0
	Libraries	268,454	£ 47,603	74	223,015	£ 38,186	56	139,306	£ 30,541	0	196,296	£ 34,817	0
Gas	Corporate	5,579,448	£ 214,084	1,026	5,712,291	£ 209,438	1,050	5,206,163	£ 204,290	957	5,206,163	£ 228,805	957
	Schools	10,297,503	£ 399,332	1,893	11,032,617	£ 391,874	2,028	10,130,005	£ 385,563	1,862	10,130,005	£ 431,831	1,862
Per site	Time Square	479,017	£ 19,460	88	611,875	£ 22,062	112	659,462	£ 25,832	121	659,462	£ 28,932	121
	Garth Hill	667,346	£ 32,012	123	1,099,194	£ 41,133	202	1,370,591	£ 53,582	252	1,370,591	£ 60,012	252
	Crematorium	1,280,133	£ 45,546	235	1,265,504	£ 42,831	233	1,125,903	£ 41,034	207	1,125,903	£ 45,958	207
	Libraries	192,909	£ 9,057	35	224,468	£ 9,838	41	213,818	£ 9,877	39	213,818	£ 11,062	39