

Carbon reduction strategy 2011 to 2020

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Executive summary

The Guildhall School of Music & Drama acknowledges that in the face of mounting global scientific consensus of mans' part in global climate change, there is a moral responsibility to act to reduce carbon.

The first version of this strategy was written in 2011 a major driving force for this strategy was the requirement from the HE sector regulator now Office for Students (OfS) and formerly Higher Education Funding Council (HEFCE) that each HE institution puts in place a carbon reduction strategy.

The UK Climate Change Act of 2008 created legally binding targets to reduce carbon emissions by 34% by 2020 and by 80% by 2050 against a 1990 baseline. The HE sector resolved that it must be in the vanguard of efforts to achieve these targets and, after widespread consultation, had facilitated the setting and adoption of sector-level carbon reduction targets for scope 1 and 2 emissions of 43% by 2020 and 83% by 2050, both against a 2005 baseline. In 2019 the Climate Change Act was amended in 2019 to set a new target of net Zero Carbon by 2050.

The OfS (formerly HEFCE) requires that each HE institution has in place a carbon reduction strategy, containing targets that are in the context of the overall sector targets but which are realistic for each institution. Institutions that did not have an approved Carbon Reduction Strategy in place by 31 March 2011 were at risk of 40% of their capital funding being withheld. Annual monitoring by the would also be undertaken to assess how well institutions are performing against their carbon reduction targets.

The financial incentives for the Guildhall School to reduce carbon emissions are immediate, since it is owned and governed by the City of London Corporation which falls into the scope of the Government's Carbon Reduction Commitment (CRC) Energy Efficiency Scheme. This scheme requires organisations to buy allowances from Government each year to cover their carbon emissions in the previous year. With the addition of Milton Court to the estate in September 2013 the cost for the CRC was estimated to be in the region of £25,000 for the 12/13 year. The price of allowances was forecast to rise each year reinforcing the incentive to reduce consumption and hence the costs of both the allowances and the energy itself. Note: The CRC will come to an end following the 2018-19 compliance year, this will partially be offset by an increase in climate change levy.

The Guildhall School has analysed its historical data and, in the first version of this strategy published in February 2011, agreed to set a carbon reduction target for scope 1 and 2 emissions arising from its existing estate of 30% by 2020. Having already achieved extremely good reductions in these emissions by 2010/11, the second version published in February 2012 increased the target for these emissions to 43% by 2020. In 2016/17 we exceeded the target for the estate excluding Milton Court achieving a 47% reduction against the baseline and again in 2017/18 we increased the target for scope 1 and 2 emissions arising from the estate excluding Milton Court to 55% by 2020.

This latest version of the strategy includes for the first time the emissions data for Milton Court. The building became fully operational from September 2013. The previous update of this strategy estimated that when fully operational the Milton Court Building carbon emissions would be in the region of 632,554 Tonnes. However, it was also noted that there would be significant increases to this estimated figure. The cause has been attributed to system commissioning difficulties and more intensive and extended use of the Building space and facilities when compared to the original model. The data shows the actual emissions for 2013/14 was 998.851 Tonnes an increase of 366.297, 58% over the design estimate and in 2017/18 830.411 Tonnes which still represents an increase of 31% compared to the design estimate but demonstrates a decrease in actual emissions of 16.86% compared with 2013/14. This represents an average annual decrease of 4.22%, if we continue with this trajectory we should see the annual emissions for Milton Court in 2019/20 being 761.909 Tonnes we have therefore revised the 2019/20 target for Milton Court and the enlarged estate to this figure.

Following the collection and analysis of the necessary data, the third revision of the strategy also included a carbon reduction target of 8% for scope 3 emissions arising from transport and of 30% arising from water and waste.

In 2017/18 we achieved a reduction of 75% of emissions from water, waste water and waste combined. On analysis of this date the majority of the savings are attributable to waste with the water exceeding the baseline.

Data shows that compared to our baseline of 2010/11 we have a substantial increase in emissions from water and waste water. This is due to the increased size of the estate since the introduction of Milton Court and more accurate data being available since 2013/14. Prior to 2013/14 we had been using estimated water consumption for Silk Street and have since opening estimated water consumption for Milton Court based on use per/m2 of Silk Street. From 2018 we have been collecting readings for Milton Court which will ensure accurate readings for the three main buildings going forward. Due to increased accuracy in data we have re-set the baseline for emissions arising from water use and waste water for the estate to 2013/14, the new baseline being 29.228 Tonnes. We saw a reduction in 2017/18 of 4% compared to the new baseline year. Early indications show that the more accurate readings currently being collected for Milton Court will be lower than those estimated so have redrawn the target for 2019/20 to be a reduction of 15% compared to the new baseline.

Significant reductions in emissions arising from waste have been achieved from 2012 where waste previously sent to landfill was diverted energy recovery which has a significantly lower carbon conversion factor than that of landfill. In addition waste tonnages were previously estimated by our contractor, this has recently changed and we should be receiving accurate weights in the future. In light of this we have redrawn the target to be 90% reduction in emissions associated with waste against 2010/11. Once the new data is received it will be carefully analysed and monitored and targets redrawn if required.

Implementation plans have been created to achieve these targets, which include behavioural change as well as technical interventions.

An important development in 2018 was the decision by the City of London to procure 100% renewable electricity from October 2018 onwards, this now being supplied to the Guildhall School. The Higher Education Statistics Agency (HESA) have advised that electricity supplied through "green tariffs" will not be considered zero carbon and the average grid electricity carbon factor will be applied. For the purposes of reporting and in the interests of consistency we will continue to use the average grid electricity carbon conversion factor.

Introduction and background

The Guildhall School

- The Guildhall School of Music & Drama is one of Europe's leading conservatoires, offering musicians, actors, stage managers and theatre technicians an inspiring environment in which to develop as artists and professionals. The School first opened its doors on 27 September 1880 to 62 part-time students in a disused warehouse in the City of London. Today it is situated in the heart of one of Britain's most important arts venues at the Barbican, with a growing international reputation for its teaching and research.
- 2. The Guildhall School of Music and Drama is distinctive in being the only major European conservatoire which is both a music school and a drama school, and one which is pre-eminent in technical theatre, professional development and music therapy. A thriving Junior Guildhall, the recent addition of the Centre for Young Musicians and a range of annual summer schools further complement the outstanding opportunities available.
- 3. Situated in the heart of the City, the School moved to its present premises in the Barbican in 1977 solidifying a unique link with both Europe's largest arts and conference centre, including the Barbican Hall and the Pit Theatre, and the world-class London Symphony Orchestra. This connection is now formally recognised with the establishment of a partnership between the School, the Barbican Centre and the LSO to create the world's leading centre for performance, training and education in the performing and visual arts.
- 4. The School currently numbers approximately 1,002 FTE students (taken from 2017/18 EMR report to the Higher Education Statistics Agency) on its roll call. In any given year, more than a third of the students are from outside the UK typically representing over 40 nationalities.

The Guildhall School's Estate

- 5. The Guildhall School of Music & Drama currently comprises approximately 33,400 m² gross internal area over four neighbouring buildings which are continually updated and enhanced.
- i) The main building is in Silk Street and attached to the Barbican Centre. It was purpose-built by the City of London and was officially opened by the Lord Mayor of London on 25 October 1977.

- ii) Sundial Court, the School's hall of residence, is located in Chiswell Street, just around the corner from the main Silk Street building. Sundial Court has 177 bedrooms in thirty-nine flats, each with either three, four, five or six bedrooms.
- iii) John Hosier Annexe, named after the Principal of the School from 1978 to 1988, has 46 teaching/practice rooms and is located at the west end of the Barbican Estate.
- Following a major building project Milton Court, based across the road from the current Silk Street building, opened in September 2013, providing the School with state-of-the-art performance and teaching spaces in approximately 11,385 m², including:
 - a 608-seat Concert Hall
 - a 227-seat Theatre
 - a Studio Theatre
 - a gymnasium
 - three major rehearsal rooms
 - TV studio suite

As well as teaching, meeting and administrative spaces, complementing and extending those currently in use in the Silk Street building. Designed to top quality professional standards, the new building will mean that the School's facilities will at long last match the outstanding quality of its training and the success of its graduates.

- 7. The School's buildings are very intensively used. Each term is 12 weeks in duration, but in practice there is considerable academic activity in the week before and the week after each term, meaning that the buildings are being used for teaching purposes for 42 weeks per year.
- In order to provide sufficient space for individual student practice, the main Silk Street building is open during term time from 7am – 10pm Monday to Friday, 8am – 9pm on Saturday and 9am – 8pm on Sunday.
- 9. During the summer vacation the Silk Street building and Sundial Court are used extensively for summer schools, some of which are organised by the School and some by external companies that hire the facilities.
- 10. With the exception of the new Milton Court building all of the School's existing estate is grade 2 listed.

The City of London Corporation

- 11. The Guildhall School is owned and governed by the City of London Corporation as part of its contribution towards the cultural life of London and the nation. The City is one of the most significant sponsors of the arts in the UK. It provides the Barbican Centre, Europe's largest multi arts and conference venue, and directly funds the London Symphony Orchestra's residency. It is also a major funder of the enormously popular Museum of London and supports a year-round programme of major arts festivals and events in the City and neighbouring areas.
- 12. The City is also the port health authority for the whole of the Thames estuary, owns and runs four famous markets: Smithfield, Billingsgate, Spitalfields and Leadenhall, manages a portfolio of property throughout London and maintains and safeguards over 10,000 acres of open space in and around it, including Hampstead Heath, Epping Forest, Burnham Beeches and a string of parks and commons in Kent and Surrey. It also runs the five bridges that cross the Thames into the City, including Tower Bridge, a major tourist attraction and an international symbol for London as a whole.
- 13. As part of the City of London Corporation, the Guildhall School is not a legal entity in its own right. As such, the School is subject to all the policies and rules of the City and in many cases has helped to develop them. This includes policies relating to sustainability and carbon reduction, an area in which the City has been active since 1975.

HE sector context

- 14. In addition to the funding that the Guildhall School receives from the City, it receives funding as part of the HE sector regulated by the Office for Students (OfS), formerly the Higher Education Funding Council for England (HEFCE). Previous Feedback showed that there was widespread agreement in the sector that sustainable development is important. The sector has agreed that tackling climate change is a challenging agenda and we need to move quickly to do it.
- 15. It is also a growing political priority both nationally and internationally. The United Nations' Intergovernmental Panel on Climate Change has concluded that warming of the climate system is unequivocal and that human activities make a substantial contribution*. Lord Stern's review of climate change** in 2006 concluded that the benefits of strong and early action will far outweigh the economic costs of not acting. In June 2008 Lord Stern said that the costs of stopping greenhouse gases rising to dangerous levels had already doubled since 2006 to 2 per cent of GDP. HE makes an important contribution to the UK's sustainable development strategy, updated in 2005, not least because of the sheer size of the estates that it controls.

* 'Climate change 2007: the physical science basis', available at the <u>website</u> under Publications and Data/Reports.

** 'Stern Review on the Economics of Climate Change', available at the <u>website</u> under Independent reviews.

Context and drivers

Climate Change Act 2008

16. The Climate Change Act 2008* aims to improve carbon management and help the transition towards a low-carbon economy in the UK. It sets the world's first legally binding targets for greenhouse gas emissions of at least 80 per cent by 2050 and at least 34 per cent by 2020**, against a 1990 baseline. Major parts of the public sector such as the NHS*** and schools**** have developed carbon reduction strategies. In summer 2009 the Government published the UK Low Carbon Transition Plan*****, which sets out how the UK will meet the 34 percent cut in emissions on 1990 levels by 2020. In 2019 the Climate Change Act was amended in 2019 to set a new target of net Zero Carbon by 2050.

* Further information is available on the <u>website</u> under Legislation/Climate Change Act 2008.

** The 2009 Budget set the first carbon budgets, as required by the Climate Change Act. This increased the level of the 2020 target from 26 per cent to 34 per cent. A further increase to 42% has been recommended by the Committee on Climate Change.

*** 'Saving Carbon, Improving Health: NHS Carbon Reduction Strategy for England' may be read on the <u>website</u> under Carbon reduction strategy.

**** 'Carbon Emissions from Schools: Where they arise and how to reduce them' may be read on the <u>website</u> under Our work/Education, Young People and skills/Schools.

***** The plan is available on the <u>website</u> under Publications.

Carbon Reduction Commitment

- 17. The Carbon Reduction Commitment Energy Efficiency Scheme (CRC) is a mandatory carbon emissions reporting and pricing scheme to cover all organisations using more than 6,000 MWh per year of electricity (equivalent to an annual electricity bill of about £500,000). The CRC came into force in April 2010 and aims to significantly reduce UK carbon emissions not covered by other pieces of legislation. The primary focus is to reduce emissions in non-energy intensive sectors in the UK. This complements the role of Climate Change Agreements and the EU Emissions Trading Scheme, which are directed primarily at energy-intensive organisations. It is UK-wide, covering large businesses and public sector organisations, and around 80 universities and colleges are likely to be within its scope. The City of London Corporation is within its scope and the Guildhall School's carbon emissions will therefore be taken into account as part of the City's reporting.
- 18. Participants in the CRC need to measure and report their carbon emissions annually, following a specific set of measurement rules. The first annual report of

emissions was in July 2011. Starting in 2012, participants purchase allowances from Government each year to cover their emissions in the previous year. This means that organisations that decrease their emissions and lower their costs under the CRC.

- 19. In October 2010, the Government announced two significant changes to the CRC as a part of the Comprehensive Spending Review:
 - The money raised from the sale of allowances will be retained by the Government rather than recycled back to CRC participants.
 - The first sale of allowances to cover emissions in fiscal year 2011/12 will be in 2012 rather than 2011.

The price of allowances had been set at a fixed price of \pounds 12 per tonne CO₂ through fiscal year 2012/13, with a floating market price after that. The per tonne cost of the CRC 2015/16 including Milton Court was \pounds 12,62.

- 20. A publicly available CRC performance league table shows how each participant is performing compared to others in the scheme.
- 21. The CRC will come to an end following the 2018-19 compliance year, this will partially be offset by an increase in Climate Change Levy.

Display Energy Certificates

22. Universities and colleges need to comply with increasingly stringent Building Regulations, which are now requiring energy efficiency improvements to buildings that are being extended or having changes made to building services. Since 1 October 2008, all public buildings have also been required to have Display Energy Certificates showing their actual energy usage, as recorded by gas, electricity and other meters, so that the public can see the building's energy efficiency in use.

Cost savings

23. Potential cost savings are an important driver behind efficiency improvements, both directly from reduced resource usage and indirectly from reduced maintenance. However, ambiance and comfort is also a driving force: over or under heated rooms create discontent and inefficient working practices.

Moral responsibilities and reputation

24. In the face of mounting global scientific consensus of mans' part in global climate change, there is a moral responsibility to act to reduce carbon. As a sector, the HE community has committed to being at the vanguard of initiatives to act in a more sustainable way, and increasingly HE institutions are being judged on how well they are performing. Since 2007 a Green League Survey has been published in the national media, which ranks HE institutions across a range of sustainability and environmental measures. Consistently low performance in this

league table could ultimately affect an institution's reputation.

Classification of emissions sources

- 25. The World Resources Institute (WRI) has developed a classification of emission sources around three 'scopes':
 - **scope 1** refers to direct emissions that occur from sources that are owned or controlled by the organisation, for example emissions from combustion in owned or controlled boilers, furnaces, vehicles
 - **scope 2** accounts for emissions from the generation of purchased electricity consumed by the organisation
 - **scope 3** is all other indirect emissions that are a consequence of the activities of the company, but occur from sources not owned or controlled by the organisation for example, commuting and procurement.

Scope	Description	Examples
Scope 1:	Direct emissions occur from	Direct fuel and energy use
Direct emissions	sources that are owned or	Transport fuel used in
	controlled by the HEI	institutions' own vehicle fleets
Scope 2:	Emissions from the	Purchased electricity
Electricity indirect	generation of purchased	
emissions	electricity consumed by the	
	HEI	
Scope 3:	Scope 3 emissions are a	Water
Other indirect	consequence of the activities	Waste
emissions	of the HEI, but occur from	Land-based business travel
	sources not owned or	Commuting (both staff and
	controlled by the HEI	students)
		Air travel (international
		students; international
		student exchange; business
		Procurement

OfS (formerly HEFCE) requirements

HEFCE closed in 2018 and responsibility for regulation of the Higher Education sector fell to the OfS who have stipulated that HEIs are required to have carbon management plans in accordance with guidance previously published by HEFCE. At this time of this latest revision it is unclear what requirements OfS will have in relation to HE institutions having and maintaining a carbon reduction strategy from 2020. Once any new requirements from funding bodies, regulators, legislative framework or other sources are known this strategy will be revised in line with these.

26. OfS (formerly HEFCE's) Carbon Reduction Strategy for the HE sector comprises:

• A sector-level target for carbon reductions that is in line with UK targets. After widespread consultation, the sector had set and adopted sector-level carbon reduction targets for scope 1 and 2 emissions of 43% by 2020 and 83% by 2050, both against a 2005 baseline.

- A requirement for institutions to set their own targets for 2020 for scope 1 and 2 emissions against a 2005 baseline. This year is being used as a baseline because it is used for reporting against UK targets, and research done demonstrated that robust data for scope 1 and 2 was available for that year at institutional level. This provided consistency across the sector against which progress can be monitored and reported.
- A commitment from institutions to achieve actual improvements through actions that are appropriate for their institution, recognising the diversity of the sector.
- Funding incentives in particular linking capital funding to performance against carbon management plans.
- Plans for annual monitoring and reporting on progress against the sectorlevel target.
- A method of regularly evaluating the approach and taking action to learn from progress to date.

The HE sector targets are absolute targets, which mean actual carbon emission reductions against the levels in a fixed past year. The UK national targets under different policies and legislation are absolute and set against a 1990 baseline year. The rationale for this approach is based on the fact that the capacity of the Earth to manage carbon emissions is itself finite. Targets have so far been set for scope 1 and 2 emissions only, because this baseline has been calculated with a reasonable degree of confidence. There is a degree of uncertainty for scope 3 emissions for 1990. Work was undertaken with the sector to improve measurement of scope 3 emissions, including procurement, with the intention of setting sector-level targets for these emissions by December 2013. In order to achieve this, research was commissioned on measuring scope 3 emissions in the HE sector in the areas of transport, water and waste and procurement. All three reports have been published and in January 2012 Guides to Good Practice in the areas of transport (HEFCE website) and water and waste (HEFCE website) were produced.

- 27. Recognising the significant diversity of the sector with its range of missions, priorities, histories, subject mix, infrastructure and research, institutions were asked to set targets and develop plans that are appropriate to their individual circumstances but within the national target framework. These targets were being collated through the second phase of the Capital Investment Framework CIF2 to determine whether collectively they are sufficient to meet the sector target.
- 28. The distribution of capital funding was based on the Capital Investment Framework, which relied on a mix of metrics, information submitted by institutions and the HE sector regulator's knowledge of institutions in order to make a holistic

and balanced assessment. The 84 institutions (including the Guildhall School) that satisfied the requirements of CIF1 are benefited from a streamlined process for capital funding. The process for CIF2 was remodelled as follows:

- metrics expanded to include carbon emissions
- strategic questions include a more specific and demanding requirement in relation to carbon
- institutions required to report on progress in implementing their carbon plans, and on the results achieved.
- 30. Institutions that did not meet the requirements of CIF2 were at risk of 40% of their capital funding being withheld. This meant that an approved Carbon Reduction Strategy needed to be in place by 31 March 2011.
- 31. It was not specified how carbon plans should be developed or what they should contain. However, there are a number of key elements that were required to be present in an institution's carbon management plan, which are needed to satisfy the requirements of CIF2. These were:
 - A carbon management policy or strategy this could be part of a wider environmental/sustainability policy.
 - A carbon baseline for 2005 that covers all scope 1 and 2 emissions. This year is being used as a baseline because it is used for reporting against UK targets, and research has demonstrated that robust data for scope 1 and 2 is available for that year at institutional level. This will provide consistency across the sector against which progress can be monitored and reported. Institutions are encouraged to measure a baseline for scope 3 emissions and in the longer term these are expected to be included.
 - Carbon reduction targets. These must:
 - cover scope 1 and 2 emissions, although institutions may choose to set additional targets for wider aspects
 - be set against a 2005 baseline. Institutions may choose to set their reductions in context by setting additional targets against an alternative baseline year
 - be set to 2020, because this is the timescale for interim government targets. This will provide consistency across the sector against which progress can be monitored and reported. Institutions may also set interim milestones
 - be publicly available.
 - An implementation plan to achieve absolute carbon emission reductions across scopes 1, 2 and 3 including timescales and resources. These may cover capital projects and actions to embed carbon management within the

institution, for example, through corporate strategy, communication and training.

- Clear responsibilities for carbon management.
- A commitment to monitor progress towards targets regularly and to report publicly annually.
- The carbon management plan and targets must be signed off by the governing body.

Approach to carbon reduction

- 32. The first version of this document, published in February 2011, created a plan for reducing the School's carbon emissions and set a target for scope 1 and 2 emissions by 2020. The plan is a working document and will be updated on a regular basis in the light of the School's progress towards achieving its target. Having achieved extremely good reductions in scope 1 and 2 emissions in 2010/11, the second version considerably increased the target for these emissions. It also included targets for scope 3 emissions in the areas of transport and water and waste, following the collection and analysis of the necessary data. We have been carefully monitoring sources of emissions and, in this revision have redrawn the targets for Scope 1&2 for the estate excluding Milton Court, and Milton Court itself. For Scope 3 we have redrawn the targets for Water and Waste and maintained the target for transport.
- 33. The strategy has been developed by members of the School's Sustainability Steering Group (SSG), in particular by staff in the engineering department, and in close consultation with colleagues in the Energy Management Team of the City of London Corporation. The SSG includes staff members representing a wide cross section of the School's activities, both academic and non-academic. It includes the President of the Student Union and other student representatives. Students were also consulted directly when a workshop was held, facilitated by a member of the City's sustainability team, which asked students to consider what a more carbon-free world might look like in 2050 and what measures needed to be put in place to get there.
- 34. The City has been engaged with carbon reduction since 1975, and has developed a range of sustainability policies including a Carbon Descent Plan. The School's own Carbon Reduction Strategy mirrors those of the City and is complementary to them, whilst setting a target that is realistic for the Guildhall School.
- 35. The City's approach to carbon reduction is summarised by the 'Three 'E's':
 - Energy procurement buy energy as cheaply and efficiently as possible
 - Energy efficiency use energy as efficiently and wisely as possible
 - Energy design use technology to reduce the amount of energy required in the first place

Carbon accountability and hierarchy

36. The carbon hierarchy in the table below provides a systematic and structured approach to managing and reducing emissions in a socially responsible and cost-effective way. Actions at the top of the hierarchy are more transformative and lasting in terms of reducing emissions. A carbon hierarchy is being used by the Department for Children, Schools and Families' Zero Carbon Task Force to help move towards the Government's ambition of delivering zero-carbon school buildings from 2016.

The Carbon Hier	archy			
REDUCE energy/fuel	Avoid unnecessary use	•	•	. <u>N</u>
demand	Passive features (for example insulation, daylight, solar gain/shading, thermal mass)	Evaluate impacts	Apply control measures	 • Learn from existing projects and practice
	Encourage energy-conscious behaviours	impact	ntrol me	om existi
EFFICIENCY of equipment and	Use energy-efficient equipment	. 0	asure	ing pr
energy/fuel sources	Provide simple and effective controls		S	ojects
	Recover useful heat			s and
	Use clean fossil fuel technology			pract
DECARBONISE energy/fuel supplies	On-site or near-site renewable energy sources, including community schemes			lice
BEFRIEND	Seek partnerships to increase capacity to do the above			
NEUTRALISE energy/fuel supplies	Consider responsible carbon offsetting schemes			
	Procure green electricity supplies			

Source: Adapted from the DCSF Zero Carbon Task Force and Parkin 'The Positive Deviant: sustainability leadership in a perverse world', Earthscan, London.

Key areas where carbon reductions can occur

37. Carbon reductions can be achieved by actions in any or all of the following areas:

- Behavioural change and awareness raising 'softer' methods can play a significant role in highlighting changing institutional priorities and in encouraging behavioural and cultural change. Studies suggest that as much as 30% carbon reduction could be achieved by behavioural change. Actions can include the insertion of environmental objectives into staff appraisals, job descriptions and the induction process, as well as educational initiatives such as workshops.
- Lights, computers and electrical appliances ensuring that all equipment is switched off when not in use and not just left in standby mode.
- Building energy and space management good space management not only reduces carbon emissions, it also frees up resources that can be used for teaching and research.
- Building fabric upgrade.
- Efficient energy supply (e.g. CHP).
- Renewable energy sources.

Waste

38. Management of waste reduces the environmental impacts associated with disposal, including the production of the greenhouse gas methane, and helps conserve finite resources.

Travel, including cycling

- 39. In 2006 emissions from transport (business travel, and staff and student commuting) accounted for 35 per cent of the HE sector's carbon baseline. Sustainable travel is about encouraging people to make informed choices about the way they travel and being aware of the consequences of these choices on their health, their environment and their local community.
- 40. At the Guildhall School, the emissions data for daily commuting are significantly less than the sector average, as most staff and students already commute by public transport or bicycle. However, the high percentage of overseas students means that significant carbon emissions are generated by travel between the School and home at the beginning and end of term.

Procurement

41. Procurement decisions have a large effect on the rate of consumption and productivity of resources, and institutions are able to influence the social and environmental impact of companies in the supply chain.

Carbon offsetting

- 42. When done correctly, carbon offsetting compensates for unavoidable emissions by paying someone to make an equivalent CO₂ saving elsewhere in the world. More and more individuals and businesses are volunteering to offset their emissions. Offsetting is not a 'cure' for climate change; the most effective way to combat climate change is to reduce emissions. However, good-quality offsetting can balance the impact of our actions and help raise awareness of climate change issues. The cost of offsetting can also provide an incentive to make further emission reductions at home.
- 43. Carbon offsetting was not accepted by as a means of meeting an institution's carbon reduction target for scopes 1 and 2. However, carbon offsetting may form part of an institution's carbon management plan for mitigating the effects of essential activities that create emissions under scope 3. Before choosing to offset, it is important that steps are taken to measure and, where possible, avoid and reduce emissions. To be able to offset, HEIs can then calculate their unavoidable emissions to know how many tonnes of CO₂ they wish to offset. Once the number of tonnes to be offset is known, credits can be bought from emissions reduction projects for the equivalent amount.
- 44. The carbon market is complex and there are numerous types of credits available for offsetting. To help consumers identify which credits are good-quality credits, the UK Government has established a voluntary quality assurance scheme for carbon offsetting.
- 45. The Guildhall School has analysed the benefits of carbon offsetting together with the financial cost of doing so, and has concluded that there is still much to be achieved by investment in technical interventions that actually reduce emissions in the first place. The conclusion is that the School's financial resources are better spent, at least for the time being, on carbon reducing initiatives rather than on carbon offsetting, as carbon reducing initiatives will have a far greater effect. The situation will be further reviewed in future years.

Carbon emissions data – scopes 1 and 2

- 46. The data on the next page shows how the Guildhall School's total direct greenhouse gas emissions (scopes 1 and 2) have been calculated for academic years 2005/06 to 2015/16. The first year establishes the 2005 baseline, as required by OfS (formerly HEFCE) against which the School's future greenhouse gas reduction targets will be based.
- 47. All buildings have data for the consumption of purchased electricity, measured in kWhs per month. In addition, the School's main building in Silk Street has data

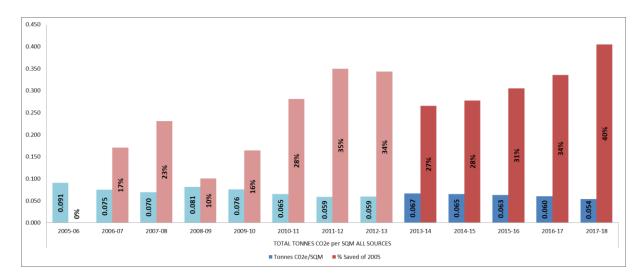
for the consumption of hot and chilled water from the Citigen CHP plant, and the residential accommodation at Sundial Court has data for the consumption of hot water from Citigen. We have since 2016/17 included metered gas consumption for Sundial Court for cooking and heating Again, these data are shown in kWhs per month. The School also runs one diesel-fuel Transit van, which it uses largely for local and inter-site deliveries. Data for this vehicle has been included shown in miles travelled per month.

- 48. The Department of the Environment, Food and Rural Affairs (DEFRA) has developed conversion factors that can be used to calculate carbon emissions for a given fuel. All the above data have been converted into Tonnes CO₂e using the Guidelines to DEFRA / DECC's GHG conversion factors for company reporting (website). The exact conversion factors used for each fuel in each year are shown in the data tables, and are updated each year as necessary.
- 49. In the case of hot and chilled water from Citigen's CHP plant, the School has been consistent with City of London Corporation policy and used the relevant conversion factors for natural gas. Whilst at first glance this appears to be an anomaly, it is because Citigen does not generate electricity for the national grid for 100% of the time. When it is not generating electricity, it satisfies the heating and chilling requirements of its customers by using stand-alone gas boilers and electric chillers.
- 50. Although the above methodology is an over-estimate of the City Corporation's and the School's carbon emissions, there is a compensating factor because it is the kWhs of metered hot (and chilled) water that is being measured as opposed to the more correct kWhs of natural gas used to generate it. Rather than attempt to calculate the equivalent kWhs of natural gas used, which would require complicated assessments of the efficiency of Citigen's gas boilers, the City Corporation prefers to calculate its carbon emissions based on the lower kWhs of hot (and chilled) water supplied, because this is more than compensated by the fact that gas conversion factors are being applied to all of the metered hot (and chilled) water, when in fact at least some of it is carbon free (being the by-product of electricity generation). As Citigen builds up its customer base, with longer CHP running justified, the carbon factor for heat and chilled water supplied will gradually improve.

TOTAL GREENHOUSE GAS EMISSIONS – SCOPES 1 AND 2

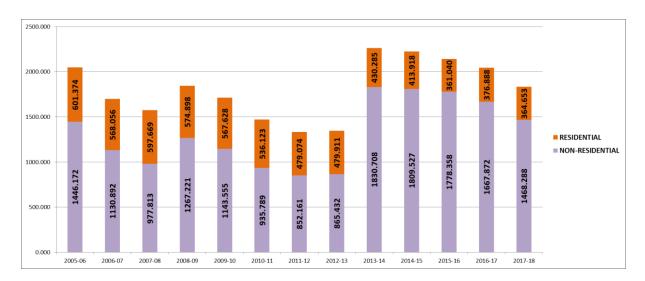
					1 & 2 Emm						
					ON-RESIDENTIA	<u>L</u>					
	Month/Year	2005-06	ELECTRICITY 2015/16	(kWh) 2016/17	2017/18		Month/Year	CI 2005-06	IP Heating (Citige 2015/16	n) (kWh) 2016/17	2017/18
	Aug	105,136	101,110	97,856 107,247	100,285 104,987		Aug	45,180 32,370	52,680	27,560 24,040	29,230 34,180
	Sep Oct	126,128 139,845	112,229 122,566	107,247 120,249	104,987 129,319	L	Sep Oct	32,370 50,120	51,740 58,500	24,040 29,880	34,180 32,270
t i	Nov	165,191	125,900	134,062	142,709	SILK STREET	Nov	101,660	61,550	39,940	33,370
ee	Dec	169,401	105,580	106,410	126,571	RE	Dec	118,570	65,134	40,440	70,960
Silk Street	Jan Feb	212,463 181,345	135,113 133,268	135,695 124,762	138,259 139,560	Ë	Jan Feb	108,330 121,760	160,560 70,180	42,960 66,750	66,630 79,970
0)	Mar	181,345	137,130	125,615	148,220	S.	Mar	121,600	77,970	49,150	79,660
	Apr	125,043	124,754	101,085	107,794	X.	Apr	71,020	71,250	47,720	50,890
S	May Jun	136,543 135,015	127,289 114,027	123,415 118,409	119,207 117,014	SIL -	May Jun	60,840 39,400	52,991 36,694	43,410 31,010	43,490 36,770
	Jul	118,836	104,261	118,294	131,735	0)	Jul	33,370	29,883	26,800	31,030
	Total	1,803,681	1,443,227	1,413,099	1,505,660		Total	904,220	789,132	469,660	588,450
	Aug		8,822	12,664	2,289		Aug		79,258	41,600	2,700
<u>م</u>	Sep		9,348	13,117	7,678	RT	Sep		97,742	37,600	3,000
	Oct Nov	44,280	12,178 12,572	15,723 16,740	10,162 10,365	- H	Oct Nov		77,813 87,188	99,500 171,200	17,000 96,000
JOHN HOSIER ANNEX	Dec		11,700	9,920	5,351	MILTON COURT	Dec		84,000	165,500	145,100
우 典	Jan Feb	37,720	15,411	13,320	157 9,959	C	Jan Feb		137,211	44,100 249,800	164,000
HN HOS ANNEX	Mar	24,190	14,863 16,646	12,724 12,632	27,481	Z	Mar		156,698 171,909	124,100	166,000 166,500
É∢	Apr		15,506	9,859	18,107	LO	Apr		138,750	106,500	109,400
ō	May Jun	56,430	15,613 13,645	13,552 11,923	11,118 9,505		May Jun		88,250 34,825	73,900 35,200	62,200 45,200
7	Jul		12,182	6,961	8,301	Σ	Jul		17,634	17,500	15,000
	Total	162,620	158,486	149,135	120,473		Total		1,171,278	1,166,500	992,100
	Aug		124,148	127,249	133,622	(7)	Aug	45,180	131,938	69,160	31,930
T XI	Sep		131,181	125,480	138,165	CHP HEATING	Sep	32,370	149,482	61,640	37,180
Ľ,	Oct Nov		140,290 131,179	145,491 142,583	150,452 146,193		Oct Nov	50,120 101,660	136,313 148,738	129,380 211,140	49,270 129,370
ō	Dec		118,376	138,866	128,994	E E	Dec	118,570	149,134	205,940	216,060
C	Jan		128,700	135,104	148,492	H	Jan	108,330	297,771	87,060	230,630
MILTON COURT	Feb Mar		131,338 138,912	130,914 149,396	135,712 144,212	OTAL CHP HEATIN	Feb Mar	121,760 121,600	226,878 249,879	316,550 173,250	245,970 246,160
2	Apr		128,980	133,193	132,704		Apr	71,020	210,000	154,220	160,290
- <u>1</u>	May Jun		133,734 131,772	149,503 148,955	151,359 160,508	N N	May	60,840 39,400	141,241 71,519	117,310 66,210	105,690 81,970
Ξ	Jul		120,716	146,955	150,510	TOTAL	Jun Jul	33,370	47,517	44,300	46,030
	Total		1,559,326	1,673,375	1,720,923	-	Total	904,220	1,960,410	1,636,160	1,580,550
5	Aug Sep	349,262 6,544					version Factor	0.185	0.18400	0.18416 301.315	0.18396 290.758
MILTON COURT OFFICES & REH SPACES	Oct	5,730									
N COURT FICES & SPACES	Nov Dec	19,554						CH	ILLED CHP (Citige	en) (kWh)	
ron cou offices & eh spaci	Jan					ĒT	g				
0 F 8 F	Feb	28,259				SILK	Annal Total			317,980	355,667
	Mar Apr	12,899				IN T	Anna				
	May	15,221				S					
	Jun Jul	8,186					Aug		83,000	121,900	82 200
2	Total	445,655					Sep		43,000	93,400	82,200 55,700 60,400
						21	Oct		40,000	64,400	60,400
	Aug Sep			521 510	1,158 1,013	MILTON COURT	Nov Dec		40,000 29,364	64,900 71,500	59,200 44,900
STORE	Oct			405	1,042	8	Jan		35,065	22,800	45,200
ō	Nov			537	929	z	Feb		41,723	84,100	50,000
Ē	Dec Jan			516 612	1,046 956	2	Mar Apr		48,848 48,750	61,500 51,700	54,700 71,500
0)	Feb			887	885	<u> </u>	May		56,250	75,500	102,200
Å,	Mar			1,001	962	Σ	Jun		73,842	96,100	117,900
ō	Apr May			980 973	909 966		Jul Total		84,528 624,370	98,400 906,200	130,000 873,900
PROPS	Jun			939	940		rotai		021,070	000,200	010,000
	Jul			1,090	931	<u>່</u> ບຸ	Aug		83,000	148,398	111,839
	Total		L	8,971	11,737	DTAL CHP COOLING	Sep Oct		43,000 40,000	119,898 90,898	85,339 90,039
. ≺	Aug	454,398	234,080	238,290	237,354	1 E	Nov		40,000	91,398	88,839
A I	Sep	132,672	252,758	246,354	251,843	2 5	Dec		29,364	97,998	74,539
N E	Oct Nov	189,855 165,191	275,034 269,651	281,868 293,922	290,975 300,196	ĩ Đ	Jan Feb		35,065 41,723	49,298 110,598	74,839 79,639
Ëά	Dec	188,955	235,656	255,712	261,962	CHP	Mar		48,848	87,998	84,339
8 9	Jan Feb	250,183 209,604	279,224 279,469	284,731 269,287	287,864 286,116	2 स	Apr		48,750 56,250	78,198 101,998	101,139 131,839
	Feb Mar	209,604 225,824	279,469 292,688	269,287 288,644	286,116 320,875	2 Q	May Jun		56,250 73,842	101,998 122,598	131,839 147,539
	Apr	125,043	269,240	245,117	259,514	TOTAL	Jul		84,528	124,898	159,639
	May Jun	208,194 135,015	276,636 259,444	287,443 280,226	282,650 287,967	F	Total		624,370	1,224,180	1,229,567
N	Jul	127,022	237,159	272,986	291,477	Conv	version Factor	0.185	0.18400	0.18416	0.18396
OTAL ELECTRICIT NON-RESIDENTIAL		2,411,956	3,161,039	3,244,580	3,358,793		FONNES CO2e	0.000	114.884	225.445	226.191
TOTAL ELECTRICIT NON-RESIDENTIAL	Total							167.281	475.600	526.760	516.949
Conversion Fac	Total	0.53023	0.41205	0.35156	0.28307 950.774	Combin	led CHP Total	Miles T	ravelled	Litres P	irchased
•	Total	0.53023 1,278.891	1,302.506	1,140.665	0.28307 950.774	ш		Miles T	ravelled	Litres Pu	irchased
Conversion Fac	Total	0.53023 1,278.891 2005-06	1,302.506		0.28307 950.774 2017/18	ш	Total	Miles T			
Conversion Fac	Total	1,278.891 2005-06 3,316,176.000	1,302.506 TOTAL NON- 2015/16 5,745,819.000	1,140.665 RESIDENTIAL KWH 2016/17 6,104,920.000	950.774 2017/18 6,168,910.000	ш	Total	Miles T	966.00	Litres Pu 172	rchased 215
Conversion Fac	Total	1,278.891 2005-06	1,302.506 TOTAL NON- 2015/16 5,745,819.000 173%	1,140.665 RESIDENTIAL KWH 2016/17 6,104,920.000 184%	950.774 2017/18	FLEET	Annal Total		966.00	172	215
Conversion Fac	Total	1,278.891 2005-06 3,316,176.000 100% 1,446.172	1,302.506 TOTAL NON- 2015/16 5,745,819.000 173% TOTAL TONNES (1,778.358	1,140.665 RESIDENTIAL KWH 2016/17 6,104,920.000 184% 20 ₂₀ NON-RESIDENTIAL 1,667.872	950.774 2017/18 6,168,910.000 186% 1,468.288	FLEET	Total	Miles T 0 0.000			
Conversion Fac	Total	1,278.891 2005-06 3,316,176.000 100%	1,302.506 TOTAL NON- 2015/16 5,745,819.000 173% TOTAL TONNES (1,778.358 123%	1,140.665 RESIDENTIAL KWH 2016/17 6,104,920.000 184% 2020 NON-RESIDENTIAL 1,667.872 115%	950.774 2017/18 6,168,910.000 186% 1,468.288 102%	FLEET	Pursion Factor	0	966.00 0.26116	172 2.60016	215 2.62694
Conversion Fac	Total	1,278.891 2005-06 3,316,176.000 100% 1,446.172	1,302.506 TOTAL NON- 2015/16 5,745,819.000 173% TOTAL TONNES (1,778.358 123%	1,140.665 RESIDENTIAL KWH 2016/17 6,104,920.000 184% 20 ₂₀ NON-RESIDENTIAL 1,667.872	950.774 2017/18 6,168,910.000 186% 1,468.288 102%	FLEET	Pursion Factor	0	966.00 0.26116	172 2.60016	215 2.62694
Conversion Fac	Total	1,278.891 2005-06 3,316,176.000 100% 1,446.172 100%	1,302,506 TOTAL NON- 2015/16 5,745,819.000 173% TOTAL TONNES 123% TOTAL TONNES CO ₂ 0	1,140.665 RESIDENTIAL KWH 2016/17 6,104,920.000 184% 20 ₂ 0 NON-RESIDENTIAL 1,667.872 115% per SQM NON-RESIDENT	950.774 2017/18 6,168,910.000 186% 1,468,288 102%	FLEET	Pursion Factor	0	966.00 0.26116	172 2.60016	215 2.62694

					RESIDENTIAL					
			CHP HEATING (Cit	tigon) (kWh)					DENTIAL KWH	
	Month/Year	2005-06	2015/16	2016/17	2017/18		1,976,894.000	1,313,374.000	1,537,010.000	1,665,704.00
	Aug	45,550	36,290	27,320	23,190		100%	66%	78%	84%
	Sep	51,050	29,100	21,690	22,370					
F	Oct	82,920	67,420	68,630	43,470			TOTAL TONNES O		L
SUNDIAL COURT RESIDENTIAL	Nov	125,200	74,250	110,530	118,500		601.374	361.040	376.888	364.653
ŭ₽	Dec	133,800	45,500	105,500	125,410		100%	60%	63%	61%
S R	Jan	164,910	168,230	155,460	124,490		707	AL TONNES CO20		
<u>₹</u>	Feb Mar	149,810 206,000	118,640 23,770	125,130 112,010	152,730 135,630	SQM	8700	8700	8700	8700
P 8	Apr	138,630	90.938	79,740	76,280	Tonnes C02e/SQM	0.069	0.041	0.043	0.042
	May	99,390	60,511	66,240	54,750	% of 2005	100%	60%	63%	61%
0,	Jun	53,800	42,681	36,540	38,600					
	Jul	43,250	32,568	26,070	26,040					
	Total	1,294,310	789,898	934,860	941,460					
Conversion Fac		0.185	0.18400	0.18416	0.18396					
TONNES CO2	e	239.447	145.341	172.164	173.191				ALL SOURCES	
						Total KWH	5,293,070.000	7,059,193.000		
						% used of 2005	100%	133%	144%	148%
			ELECTRICITY	(kWh)		% Saved	100 /6	-33%	-44%	-48%
	Month/Year	2005-06	2015/16	2016/17	2017/18					
	Aug	39,232	48,672	48,538	49,271					
⊴	Sep	52,873	43,993	47,912	50,216		TOTAL TO	NNES SCOPE	1 & 2 CO2e ALL	SOURCES
RESIDENTIAL	Oct	61,068	46,607	49,517	54,596	Tonnes of C02e	2,047.546	2,139.397	2,044.760	1,832.94
H	Nov	61,509	46,366	45,267	51,964	% used of 2005	100%	104%	100%	90%
S	Dec	48,504	38,840	37,599	39,445	% Saved	100%	-4%	0%	10%
E E	Jan	61,105	45,537	47,675	49,411					
F	Feb	60,289	42,127	44,647	48,295					
COURT	Mar	64,508	42,273	51,665	48,703		TOTAL	FONNES CO2e I	per SQM ALL S	OURCES
8	Apr	53,745	38,035	44,330	76,270	SQM	22.614	33,999	33,999	33,999
Ĕ	May	62,251	43,901	48,404	54,710	Tonnes C02e/SQM	0.091	0.063	0.060	0.054
SUNDIAL		59,889	42,833	46,382	38,580	% used of 2005	0.031	69%	66%	60%
2	Jun						100%			
DS SC	Jul	57,611	44,292	48,589	26,070	% Saved		31%	34%	40%
Conversion Fac	Total	682,584 0.53023	523,476 0.41205	560,525 0.35156	587,531 0.28307					
							TOTAL TO			00110050
TONNES CO ₂	e	361.927	215.698	197.058	166.312			NNES CO ₂ e per		
						No. of Students	755	876	953	1002
			GAS (kW			Tonnes C02e/Stu	2.712	2.442	2.146	1.829
	Month/Year	2005-06	2015/16	2016/17	2017/18	% used of 2005	100%	90%	79%	67%
	Aug			10,535	13,087	% Saved	100 %	10%	21%	33%
ĕ L	Sep			1,969	12,666					
ENTIAL	Oct			3,244	34,985		COMPARISO	N KWH NON-R	ESIDENTIAL / F	RESIDENTI
ä	Nov			3,714	7,823	Non-residential kWh	3.316.176.000	5,745,819,000	6.104.920.000	6.168.910.
RESIDE	Dec			2,510	8,011	Residential kWh	1.976.894.000		1.537.010.000	
HH H	Jan			2,571	8,346	Total kWh	1	7.059.193.000		
4						%age kWh non -	5,293,070.000	7,055,155.000	7,041,930.000	7,034,014.0
SUNDIAL COURT	Feb			1,332	7,763		62.65%	81.39%	79.89%	78.74%
8	Mar			3,006	8,832	residential				
Ę.	Apr			2,695	9,483	%age kWh	37.35%	18.61%	20.11%	21.26%
AIC .	May			4,169	8,002	residential				
ž	Jun			1,865	7,397		COMPARI	SON TONNES O	O2 NON RES	
ß	Jul Total			4,015	10,318		COMPARI			DENTIAL /
		0		0 41,625	136,713	Non residential		RESID		
Conversion Fac TONNES CO ₂		0.18500	0.18400	0.18416 7.666	0.18396 25.150	Non-residential Tonnes CO2e	1,446.172	1,778.358	1,667.872	1,468.28
						Residential Tonnes CO2e	601.374	361.040	376.888	364.653
						Total tonnes CO2e	2,047.546	2,139.397	2,044.760	1,832.94
						% age Tonnes CO2e	70.63%	02 4 29/	04 570/	00 449/
							70.63%	83.12%	81.57%	80.11%
						Non-residential % age tonnes CO2e Residential	29.37%	16.88%	81.57% 18.43%	80.11%

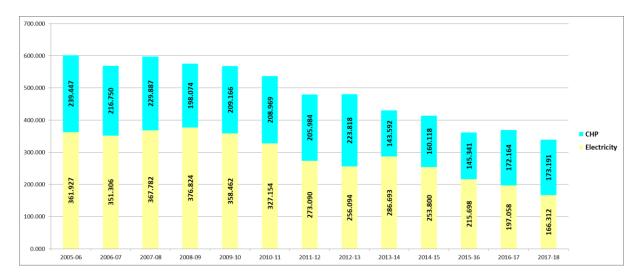


Total Tonnes C0₂e per Square Meter (all sources)

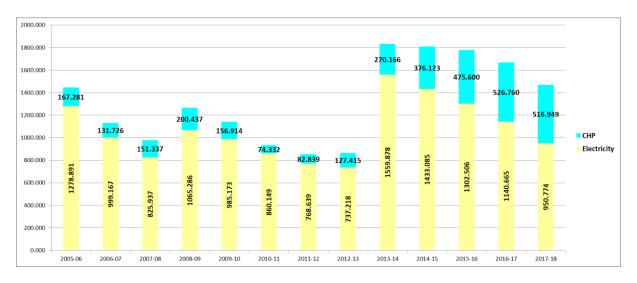
Total Sqm 2005 - 2013 = 22,614 / Total Sqm 2013 - present = 33,999



Total Tonnes C02e (all sources)



Residential C02e: CHP/Electricity split



Non-Residential C02e: CHP/Electricity split

Assessment against baseline and target – scopes 1 and 2

- 51. The data in the previous section show that the Guildhall School's total direct greenhouse gas emissions (scopes 1&2) in academic year 2005/06 amounted to 2,047.545 tonnes. This establishes the 2005 baseline against which the School's future greenhouse gas reduction targets will be based, in line with the rest of the HE sector.
- 52. After significant reductions in the following two years, there was a substantial increase in 2008/09, largely due to the failure of the Building Energy Management System in the main Silk Street building. After this problem was solved, energy consumption immediately started to fall, leading to a reduction of carbon emissions in 2009/10 to 1,730.256 tonnes. This represents a reduction of 15.5% against the 2005 baseline.
- 53. In 2010/11, a further very considerable reduction was achieved of 15.67% to 1,459.042 tonnes, which represents a reduction of 28.74% against the 2005 baseline. This achievement is attributable in the most to further refinements to the settings of the BEMS in the Silk Street building as engineering staff become ever more experienced in using it, but also in part to the effects of behavioural change by staff and by students, which is beginning to make a noticeable difference to energy consumption.
- 54. As a consequence of the above results, the Guildhall School committed itself to increasing its target for the reduction of total scope 1 and 2 direct greenhouse gas emissions arising from its existing estate from 30% to **43%** by the academic year 2019/20 against its 2005 baseline. This is an absolute target, meaning that total direct greenhouse gas emissions arising from its existing estate (i.e. not including Milton Court) must not exceed **1,167.101 tonnes** in 2019/20.
- 55. The School also set interim milestones towards achieving its 2020 target as follows:
 - 31% reduction by 2011/12, equating to a maximum of 1,412.806 tonnes
 - 38% reduction by 2015/16, equating to a maximum of 1,269.478 tonnes
 - 43% reduction by 2019/20, equating to a maximum of 1,167.101 tonnes

Note the 2019/20 target has now been revised as below.

56. The School achieved its first milestone target in the 2011/12 period with a reduction to 1,331.236 tonnes, which represents a reduction of 35% against the 2005 baseline. It can be noted that in 2015/16 there was a further reduction to 166.478 Tonnes, which represents a reduction of 43% Tonnes again exceeding the second interim milestone target of 38%. In 2017/18 the School achieved a further reduction to 1,002.530 Tonnes ecceding the third interim milestone target of 43% having achieved a reducion of 52%.

- 57. With further carbon reduction measures planned for the next reporting period we have increased our 2019/20 target to a 55% reduction equating to a maximum of 921,395 for the estate excluding Milton Court
- 58. The School believes its new 2020 reduction target to be appropriate and achievable but realistic, and takes into account the following factors:
 - The initiatives and controls already in place as a result of the School being part of the City of London Corporation
 - The reductions already achieved as a result of the new BEMS being operational
 - The constraints arising from the School's buildings being grade 2 listed, and the specialist uses to which large parts of the School's estate are put as an international performing arts institution

Milton Court

- 59. The Milton Court building became operational in September 2013, adding 11,385m² to the School's estate. The building has been designed to the highest possible environmental standards for its type, including the use of the Citigen CHP plant for all its heating and most of its cooling requirements. Inevitably, the addition of a building of this size to the estate has lead to an overall increase in the School's energy consumption and therefore its carbon emissions.
- 60. The School's 2020 carbon reduction target of 43% therefore relates to the estate as it exists in 2013 and does not include Milton Court.
- 61. The designers of Milton Court provisionally estimated that its annual energy consumption is likely to be in the region of 1,660,000 kWhs, which equates to total scope 1 and 2 direct greenhouse gas emissions of 632.554 tonnes. This is calculated as follows:

Milton Court	Electricity	CHP (Citigen)	Total
kWhs	970,000	690,000	1,660,000
Conversion factor	0.52037	0.18521	
Tonnes CO2e	504.759	127.795	632.554

- 62. Since the commissioning of the building, its energy consumption has been monitored separately from the rest of the estate. Consumption has consistently been above the estimates, this being accounted for by commissioning difficulties with the M&E plant alongside a greater utilisation than originally predicted.
- 63. As in the previous report the table below estimated the carbon emissions for

Milton Court. Taking account of the above carbon reduction targets and milestones for its existing estate the table shows that the School's overall emissions increased with the addition of Milton Court. However, it can be noted that in 2015/16 the total emissions for the enlarged estate were still below the 2005 baseline.

- 64. Once the increased size of the estate is taken into account, the carbon emissions per m² of estate reduced from 0.091 tonnes to 0.054 tonnes, a reduction of 40%.
- 65. The data shows the actual emissions for Milton Court in 2013/14 were 998.851 Tonnes an increase of 366.297, 57% over the design estimate and in 2017/18 830.411 Tonnes, 31% over the design estimate. There is an actual decrease in 2017/18 compared to 2013/14 of 16.86% representing an annual decrease of 4.22%. If we continue with this trajectory we will see the annual emissions for Milton Court in 2019/20 being 761.909 we have therefore revised the 2019/20 target for Milton Court and the enlarged estate to this figure.

Targets in previous version of c	arbon red	uction stra	itegy		
Year	2005 - 06	2010 - 11	2011 - 12	2015 - 16	2019 - 20
Total tonnes CO ₂ e for estate (excl Milton Court)	2,047.54 5	1,459.04 2	1,401.35 2	1,269.47 8	1,167.10 1
Total tonnes CO ₂ e for Milton Court				632.554	632.554
Total tonnes CO ₂ e for enlarged estate	2,047.54 5	1,459.04 2	1,401.35 2	1,902.03 2	1,799.65 5
Approx. total area of estate (m ²)	22,614	22,614	22,614	33,999	33,999
Tonnes CO ₂ e per m ² of estate	0.091	0.065	0.062	0.056	0.053

Revised targets this review					
Year	2005 - 06	2010 - 11	2011 - 12	2015 - 16	2019 - 20
Total tonnes CO ₂ e for estate (excl Milton Court)	2,047.54 5	1,459.04 2	1,401.35 2	1,269.47 8	921,395
Total tonnes CO ₂ e for Milton Court				632.554	761.909
Total tonnes CO ₂ e for enlarged estate	2,047.54 5	1,459.04 2	1,401.35 2	1,902.03 2	1,683,30 4
Approx. total area of estate (m ²)	22,614	22,614	22,614	33,999	33,999
Tonnes CO ₂ e per m ² of estate	0.091	0.065	0.062	0.056	0.050

Carbon emissions data – scope 3

- 66. Scope 3 indirect carbon emissions arise principally from transport, water, waste and from procurement. These carbon emissions are indirect, i.e. they are a consequence of the organisation's activities but the source of the emissions is not under the organisation's direct control. As a result, scope 3 emissions are much harder to calculate and the institution can only affect them by behavioural change
- 67. Student travel surveys have been carried out in 2010, 2012 and 2014 which gathered data on the modes of transport used by students when commuting to and from the School on a daily basis, and when travelling to and from their home address at the beginning and end of each term.
- 68. A staff travel survey was first carried out in 2011, which gathered data on the modes of transport used by staff when commuting to and from the School on a daily basis. Relevant multiplication factors were then applied to calculate an estimated total for that year. Staff and student business travel for 2010/11, e.g. to conferences, courses, concerts etc., was calculated by examining the travel expense claims made through the School's finance system. A follow up survey was carried out in 2013 and 2015.
- 69. The Guildhall School's water supply to the main Silk Street building is shared with the adjacent Barbican Centre. Water consumption for this building had been calculated at 40% of the total combined consumption, which is metered. Water consumption for Sundial Court for 2010/11 onwards had been taken directly from meter readings. Water consumption for 2010/11 onwards for John Hosier Annex has been estimated from the utility bills. Waste water volumes in all buildings had been previously calculated at 49% of the water supply volumes, this being the fraction previously applied by the utility company to the School's bills, from examination of recent billing the %age applied to calculate waste water is now 83% of water consumption.

- 70. From 2013/14 now have metered consumption data for Silk Street and have since estimated water consumption for Milton Court based on consumption per/m2 of Silk Street. From 2018 we have been collecting readings for Milton Court which will ensure accurate readings for the three main buildings going forward. Due to increased accuracy in data we have re-set the baseline for emissions arising from water use and waste water for the estate to 2013/14, the new baseline being 29.228 Tonnes CO2e, we have seen a reduction in 2017/18 of 4.44% compared to the baseline year. Early indications show that the more accurate readings currently being collected for Milton Court will be lower than those estimated so have redrawn the target for 2019/20 to be a reduction of 15% compared to the new baseline for the whole estate.
- 71. Waste volumes for 2010/11 onwards have been calculated in tonnes recycled and tonnes not recycled for mixed municipal waste. Until 2010/11, the City of London sent its non-recyclable waste to landfill. From 2011/12 onwards, this waste is sent to an energy recovery plant in South East London.
- 72. The Department of the Environment, Food and Rural Affairs (DEFRA) has developed conversion factors that can be used to calculate scope 3 carbon emissions for various modes of transport and for water and waste. All the data have been converted into Tonnes CO₂e using the Guidelines to DEFRA / DECC's GHG conversion factors for company reporting (website). The exact conversion factors used are shown in the data tables.
- 73. Significant reductions in emissions arising from waste have been achieved from 2012 in 2017/18 these were 93% below the 2010/11 baseline. This is mainly due to waste previously sent to landfill was diverted to energy recovery which has a significantly lower carbon conversion factor than that of landfill. In addition Waste tonnages were previously estimated by our contractor, we have recently appointed a new waste contractor and we should be receiving more accurate data in the future. In light of this we have redrawn the target to be 90% reduction in emissions from waste against 2010/11. Once the new data is received it will be carefully analysed and monitored and targets redrawn if this is necessary.
- 74. We are working with our colleagues at the City of London to develop measurement and monitoring of emissions arising from procurement, this will be included in a further revision to this and/or any future strategy once a sector-wide approach be agreed.

2010 2012 2012 2014 2012 2014 2014 7000000000000000000000000000000000000	Bicycle 304,699 166,998 247,644 0.0000 0.000 0.000 TOTAL TO Bicycle 6,332 275 188	National Coach 344,738 9,030	Car 0 111,458 0 0.18943 0.000 21.113 0.000	Motorbike 0 0 143,059 0.11955 0.000 0.000 17.103 DES OF TRA DES OF TRA TO TAL DI	831,341 529,036 741,312 0.06312 52,474 33,393 46,792 NNSPORT (TT 107 1212 134 STANCES TT STANCES TT	Train (DLR (86,73 63,766 0.06166 0.000 5.356 3.983 ERM-TIME C 5.510 267 650 RAVELLED (Train (olground	Train (erground) 834,138 1,011,169 1,174,476 0,04738 39,521 47,909 55,647 DMMUTING) KILOMETRES (rinemarti)	912 253 936) Plane (domesiic)	2,228,093	Plane					
Term-lime commuting 2012 2014 2014 Conversion factor *) 2010 TONNES C02e 2010 2012 2014 2010 2012 2011 2010 2012 2014 2014 2010 2015 2014 2016 2010 Vacation travel 2010 2014 2012 Conversion factor *) 2010 TONNES C02e 2010	304,699 166,998 247,644 0.00000 0.000 0.000 TOTAL TO Bicycle 6,332 275	Bus 190,548 165,836 137,258 0.08142 15.514 11.176 DNNES CO ₂ National Coath 344,738 9,030	0 111,458 0 0.18943 0.000 21.113 0.000 e ALL MC 2010 2012 2014 London Bus 0 0	0 0 143,059 0.11955 0.000 0.000 17.103 DES OF TRA TO TAL DI Car 49,450	(ulground) 831,341 529,036 741,312 0.06312 52,474 33,399 46,792 NSPORT (IT 107 1212 134 STANCES T STANCES T Train (ulground) 43,115	Train (DLR (86,73 63,766 0.06168 0.000 5.355 3.933 ERM-TIME C 650 RAVELLED (Train (olground	(alground) 844,138 1,011,169 1,174,476 0,04738 39,521 47,909 55,647 OMMUTING) KILOMETRES	171,302 156,833 181,361 0.00000 0.000 0.000 Students 912 853 935 935	2,332,027 2,228,093 2,688,877 0,12 0,12 0,14 0,14 0,14 0,14 0,14						
Image: Conversion factor *) 2012 Conversion factor *) 2010 TONNES C02e 2010 TONNES C02e 2010 Vacation travel 2010 Vacation travel 2010 Conversion factor *) 2010 Vacation travel 2010 TONNES C02e 2010 Vacation travel 2010 TONNES C02e 2010	304,699 166,998 247,644 0.00000 0.000 0.000 TOTAL TO Bicycle 6,332 275	190,548 165,836 137,258 0.08142 15,514 13,502 11,176 ONNES C0 ₂ 0 0 0 0 0 0 0 0 0 0 0 0 0	0 111,458 0 0.18943 0.000 21.113 0.000 e ALL MC 2010 2012 2014 London Bus 0 0	0 0 143,059 0.11955 0.000 0.000 17.103 DES OF TRA TO TAL DI Car 49,450	831,341 529,036 741,312 0.06312 52,474 33,393 46,792 NNSPORT (TT 107 1212 134 STANCES TT STANCES TT	(96,73 63,76 0.06168 0.000 5.360 3.93 ERM-TIME C 5.10 2.67 650 RAVELLED (Gaground	834,138 1,011,169 1,174,476 0,04738 39,521 47,909 55,647 OMMUTING) KILOMETRES (internet)	171,302 156,833 181,361 0.00000 0.000 0.000 Students 912 853 935 935	2,332,027 2,228,093 2,688,877 0,12 0,12 0,14 0,14 0,14 0,14 0,14						
2014 Conversion factor *) 2010 TONNES C02e 2010 2011 2012 2010 2011 2012 2014 2014 2014 2014 2014 2014 2014 2010 Vacation travel 2011 Conversion factor *) 2011 TONNES C02e 2012	247,644 0.00000 0.0000 0.0000 TOTAL TO DITOTAL TO Bicycle 6,352 27/5	137,258 0.08142 15.514 13.502 11.176 ONNES CO ₂ National Coach 344,738 9,030	0.18943 0.000 21.113 0.000 e ALL MO 2010 2012 2014 London Blus 0	143,059 0.11955 0.000 0.000 17.103 DES OF TRA TO TAL DI Car 49,450	741,312 0.06312 52,274 33,393 46,792 ANSPORT (TT 107 121 134 ISTANCES T ISTANCES T Train (u/ground) 43,115	63,766 0.06168 0.0000 5.350 3.933 ERM-TIME C 510 267 650 RAVELLED (RAVELLED (Train (alground	1,174,476 0,04738 39,521 47,909 55,647 OMMUTING)	181,361 0.00000 0.000 0.000 Students 912 853 935 935 935	2,688,877 per sludent 0.12 0.14 0.14 Plane						
Conversion factor *) 2010 TONNES C02e 2014 2014 2014 Vacation travel 2014 Vacation travel 2010 Conversion factor *) 2010 TONNES C02e 2010	0.00000 0.000 0.000 TOTAL TO Bicycle 6,332 2/5	0.08142 15.514 13.502 11.176 ONNES CO ₂ National Coach 344,738 9,030	0.18943 0.000 21.113 0.000 e ALL MC 2010 2012 2014 London Bus 0	0.11955 0.000 0.000 17.103 DES OF TRA TO TAL DI Car 49,450	0.06312 52.474 33.3393 46.792 ANSPORT (TT 107 121 134 STANCES TT STANCES TT Train (u/ground) 43,115	0.06168 0.000 5.350 3.933 erM-TIME C 510 267 .660 RAVELLED (Train (alground	0.04738 39 521 47 909 55.647 OMMUTING) KILOMETRES Intrain (intrain (intrain)	0.00000 0.000 0.000 0.000 Students 912 853 935 935 935	per sludent 0.12 0.14 0.14						
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2010 2012 2012 2012 2014 2014 2014 Vacation travel 2010 2014 Vacation travel 2010 2011 Vacation travel 2012 2014 Conversion factor *) 2010 TONNES C0_2e 2012	0.000 0.000 TOTAL TO Bicycle 6,332 275	15.514 13.502 11.176 ONNES CO ₂ National Coach 344,738 9,030	0.000 21.113 0.000 2010 2010 2012 2014 Landan Bus 0	0.000 0.000 17.103 DES OF TRA TO TAL DI Car 49,450	52.474 33.393 46.792 ANSPORT (TI 107 121 134 ISTANCES TI Train (u/ground) 43,115	0.000 5.350 3.933 ERM-TIME C .510 .267 .650 RAVELLED (Tirain (o/ground	39.521 47.909 55.647 OMMUTING) KILOMETRES	0.000 0.000 Students 912 853 936 936 (domestic)	0.12 0.14 0.14 Plane						
ZONNES C02e 2012 2014 2014 2014 2014 Vacation travel 2010 Vacation travel 2012 2014 2010 Vacation travel 2010 Conversion factor *) 2010 TONNES C02e 2012	0.000 0.000 TOTAL TO Bicycle 6,332 275	13.502 11.176 DNNES C02 NNES C	21.113 0.000 e ALL MC 2010 2012 2014 Landan Bus 0	0.000 17.103 DES OF TRA TO TAL DI Car 49,450	33.393 46.792 ANSPORT (TI 107 121 134 ISTANCES TI Tirain (u/ground) 43,115	5.350 3.933 ERM-TIME C .510 .267 .650 RAVELLED (Train (o/ground	47.909 55.647 OMMUTING) KILOMETRES (intermation)	0.000 0.000 Students 912 853 935 935 (domestic)	0.12 0.14 0.14 Plane						
2014 2014 Vacation travel 2010 2012 2014 Conversion factor *) 2010 TONNES C02e 2012	0.000 TOTAL T(Bicycle 6,352 275	11.176 ONNES C0, National Coach 344,738 9,030	0.000 e ALL MO 2010 2012 2014 Landan Bus 0	17.103 IDES OF TRA TO TAL DI Car 49,450	46.792 ANSPORT (TI 107 121 134 ISTANCES TI Train (u/ground) 43,115	3.933 ERM-TIME C .510 .267 .650 RAVELLED (Tirain (o'ground	55.647 OMMUTING) KILOMETRES Train (intermat1)	0.000 Sludents 912 853 936) Plane (domestic)	0.12 0.14 0.14 Plane						
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Vacation travel 2012 2014 2014 Conversion factor *) 2010 TONNES C02e 2012	6,352 275	Coach 344,738 9,030	2014 London Bus 0	TO TAL DI Car 49,450	134 ISTANCES T Traim (wground) 43,115	.650 RAVELLED (Tirain (a/ground	Train (inlema(1)	936) Plane (domesfic)	0.14 Plane						
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Vacation travel 2012 2014 2014 Conversion factor *) 2010 TONNES C02e 2012	6,352 275	Coach 344,738 9,030	Bus 0	Car 49,450	(u/ground) 43,115	(a/ground	(interna(1)	(domesiic)							
Vacation travel 2012 2014 2014 Conversion factor *) 2010 TONNES C02e 2012	275	9,030				458,622	339.511			إكامه بهوده ب	T	i alai			
			0	32 571			300,311	29,552	1,228,022	3,424,962	5,923	323			
Conversion factor ^{a)} 2010 TONNES C0 ₂ e 2012	188				8,198	473,810	106,048	34,813	1,284,041	1,607,205	3,555	992			
2010 TONNES C02e 2012		55,878	410	78,249	7,875	568,285	119,936	107,342	1,424,323	3,678,640	6,041	, 126			
TONNES C02e 2012	0.00000	0.02932	0.08142	0.18943	0.06312	0.04738	0.01212	0.29316	0.15835	0.15054					
-	0.000	10.108	0.000	9.367				8.663	194.457	515.594					
2014	0.000	0.265	0.000	6.170	0.517	22.449	1.285	10.206	203.328	241.949					
	0.000	1.638	0.033	14.823	0.497	26.925	1.454	31.468	225.542	553.783					
														domici	
		ΤΟΤΑ		S CO ₂ e ALL N	NODES OF T			RAVEL)		Students	per student			EU	os
			2010 (i) 2012			766.				912 853		0.84	66	<u>z</u>	
			2012			856.				506		0.91	67 66	2	-
															-
		TOTAL	TONNES (2010	-	DDES OF TR/	ANSPORT (A 874.	LL STUDENT	TRAVEL)		Students 912	per sludent	0.96			
			2010			607.				312		0.71			-
			2012			990.				536		1.06			
SOURCES:															
) http://www.ukconversionlactorsc IOTES:	arbonsmai	t.co.uk/Ca	rbon facto	s full spreads	sheet 2014 v	1.2						-			-
) 2010 and 2012 data has been re	calculated (using the lai	iest canver	sion factors											<u> </u>

TAFF COMMUTER T	RAVEL SU	JRVEY NO	VEMBER	2015										
							TANCES TRA					-		
				National			Train		Train		D 1	T . (.)		
					-		(u/ground)	, ,			Plane	Total		
	2011	14,529	37,256			28,908	182,329		1,399,384		0			
Full time staff	2013	47,150		-		17,929	185,726		1,402,503			_/		
	2015	57,880			- /-	128,199	331,267	27,922	3,593,550		0	,, -		
art-time/fractional	2011	6,815	5,096	0	22,248	1,875	26,792	1,341	426,597	1,164	0	491,928		
staff	2013	2,809	3,144	0	1,676	991	16,740	0	244,036		0	269,532		
Starr	2015	4,233	3,799	0	0	0	16,695	0	263,417	655	0	288,799		
	2011	12,439	1,043	0	0	0	20,730	4,167	261,030	615	0	300,024		
Hourly- paid staff	2013	58,453	3,268	52,140	44,527	2,996	120,446	0	576,245	154	3,258	861,487		
	2015	48,541	8,794	0	195,267	8,058	356,947	0	8,184,179	735	2,380	8,804,901		
	2011	33,783	43,395	0	57,372	30,783	229,850	26,183	2,087,011	6,902	0	2,515,279		
Total	2013	108,412	52,515	52,140	78,398	21,916	322,912	0	2,222,784	2,548	3,258	2,864,883		
	2015	110,654	151,296	0	376,791	136,257	704,909	27,922	12,041,146	27,536	2,380	13,578,891		
Conversion factor a)		0.00000	0.07917	0.02930	0.18635	0.11966	0.05631	0.05461	0.04506	0.00000	0.297950			
	2011	0.000	3.436	0.000	10.691	3.683	12.943	1.430	94.034	0.000	0.000			
TONNES CO ₂ e	2013	0.000	4.158	1.528	14.609	2.622	18.183	0.000	100.152	0.000	0.971			
Γ	2015	0.000	11.978	0.000	70.215	16.305	39.693	1.525	542.538	0.000	0.709			
			TOTAL	TONNES C	O ₂ e ALL MOE	DES OF TRANS	PORT (STAFI		R TRAVEL)	•				
				2010-11			<u> </u>	126.218						
				2012-13				142.223						
				2014-15				682.963						

STAFF AND STUDENT	BOSINE.	55 TRAVE	2014 - 1:	,								
							TANCES TRA					
		Ferry	National Coach	Car	Taxi	Train (u/ground)	Train (o/ground)	Train (internat'l)	Plane (domestic)	Plane (shorthaul)	Plane (longhaul)	Tota
	2011	519	157	3,900	654	104	34,960	7,113	1,835	62,090	563,878	675,21
	2013	0	1,653	0	2,832	4,476	49,300	13,818	0	643,079	313,854	1,029,03
	2015	0	1,826	0	3,811	693	27,670	16,503	7,353	167,199	302,051	527,10
Conversion factor a)		0.11608	0.0293	0.18635	0.174807	0.05631	0.045057	0.01205	0.29795	0.16634	0.15175	
	2011	0.060246	0.004603	0.726765	0.11432378	0.00585624	1.57519272	0.08571165	0.5467383	10.328051	85.568487	
TONNES CO ₂ e	2013	0	0.048466	0	0.49513467	0.25205648	2.2213101	0.1665069	0	106.96982	47.627345	
	2015	0	0.053538	0	0.66618948	0.03902283	1.24672719	0.19886115	2.1908264	27.811882	45.836239	
		TO	TAL TONNE	S CO ₂ e AL	L MODES OF	TRANSPORT	(STAFF AND		ISINESS TRA	VEL)		
				2010-11				99.016				
				2012-13				157.781				
				2014-15				78.043				
				TOTAL	TONINES CO	e FROM ALL		DANISDORT			1	
			2010-11	TOTAL	TOININES CO		PORIVIS OF 1	1099.487				
			2012-13					907.440				
			2014-15					1751.819				
SOURCES:												
) http://www.uk.conversi	ionfactorsc	arbonsmar	t.co.uk									
IOTES:												
2011 and 2013 data ha	as been re	calculated u	using the la	test conver	sion factors							
) Methodology for calcu			-			since sufficien	t responses y	vere received				

							Water in c	ubic meter	9					
	Month	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
	Aug						192	182	167	362	556	423	566	739
	Sep Oct						186 192	176 182	162 167	597 642	631 526	648 635	634 707	724 907
5	Nov						192	176	162	712	513	753	696	839
Ξ	Dec						192	182	167	815	560	554	700	682
Ĕ	Jan						192	182	167	1089	640	775	630	910
SILK STREET	Feb						176	167	153	1091	546	798	647	1161
Y	Mar Apr						192 186	182 176	167 162	1,175 1,314	688 590	828 793	736 646	767 808
	May						192	182	167	973	590	637	886	725
S	Jun						186	176	162	631	572	648	905	689
	Jul		-	-			192	182	167	657	522	764	791	753
	Total	0	0	0	0	0	2,264	2,145	1,970	8,969	6,934	8,256	8,544	9,704
	Aug						22	21	19	21	21	21	21	21
	Sep						21	20	18	20	20	20	20	20
R.	Oct						22	21	19	21	21	21	21	21
Щ Ш	Nov Dec						21 22	20 21	18 19	20 21	20 21	20 21	20 21	20 21
őЖ	Jan						22	21	19	21	21	21	21	21
HN HOSI	Feb						20	19	18	19	19	19	19	19
ΖZ	Mar						22	21	19	21	21	21	21	21
JOHN HOSIER ANNEXE	Apr May						21 22	20 21	18 19	20 21	20 21	20 21	20 21	20 21
5	Jun						21	20	18	20	20	20	20	20
	Jul	242	242	242	242	242	22	21	19	21	21	21	21	21
	Total	242	242	242	242	242	258	246	223	242	242	242	242	242
	Aug						4	4	3		3			
	Sep						4	3	3		3			
5	Oct						4	4	3		4			
9 .	Nov						4	3	3					
5 5	Dec Jan						4	4	3					1
КIJ	Feb						3	3	3		1			
N TRUN COURT	Mar						4	4	3					1
JOHN TRUNDLE COURT	Apr May						4	3	3					
<u>o</u>	Jun						4	3	3					
	Jul	42	42	42	42	42	4	4	3	42				
	Total	42	42	42	42	42	47	43	36	42	10	0	0	0
	Aug									456	701	533	713	800
	Sep									752	795	816	799	912
MILTON COURT	Oct									809	663	800	891	1,143
5	Nov									897	646	949	877	1,057
8	Dec Jan									1,027 1,372	706 806	698 977	882 794	859 1,147
ž	Feb									1,375	688	1,005	815	1,463
ō	Mar									1,481	867	1,043	927	966
5	Apr									1,656	743	999	814 1,116	1,018 914
Ē	May Jun									1,226 795	743 721	803		
-	Jul												1 140	
	Uui									828	658	816 963	1,140 997	868 949
	Total	0	0	0	0	0	0	0	0					
		0	0	0	0	0	0	0	0	828	658	963	997	949
	Total									828 12673	658 8737	963 10403	997 10765	949 12096
٩٢	Total Aug Sep	0	0	0	0	0	218 211	207 199	189 183	828 12673 839 1369	658 8737 1280 1449	963 10403 977 1484	997 10765 1300 1453	949 12096 1560 1656
ER TIAL	Total Aug Sep Oct	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	218 211 218	207 199 207	189 183 189	828 12673 839 1369 1472	658 8737 1280 1449 1213	963 10403 977 1484 1456	997 10765 1300 1453 1618	949 12096 1560 1656 2070
TER NTIAL	Total Aug Sep Oct Nov	0 0 0 0	0 0 0	0 0 0 0	0 0 0 0	0 0 0	218 211 218 211	207 199 207 199	189 183 189 183	828 12673 839 1369 1472 1629	658 8737 1280 1449 1213 1179	963 10403 977 1484 1456 1721	997 10765 1300 1453 1618 1593	949 12096 1560 1656 2070 1916
VATER DENTIAL	Total Aug Sep Oct	0 0 0 0	0 0 0 0	0 0 0	0 0 0	0 0 0 0	218 211 218 211 218	207 199 207	189 183 189	828 12673 839 1369 1472	658 8737 1280 1449 1213	963 10403 977 1484 1456	997 10765 1300 1453 1618	949 12096 1560 1656 2070 1916 1562
. WATER SIDENTIAL	Total Aug Sep Oct Nov Dec Jan Feb	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	218 211 218 211 218 218 218 199	207 199 207 199 207 207 189	189 183 189 183 189 189 189 174	828 12673 839 1369 1472 1629 1863 2482 2485	658 8737 1280 1449 1213 1179 1286 1467 1253	963 10403 977 1484 1456 1721 1273 1772 1822	997 10765 1300 1453 1618 1593 1603 1444 1481	949 12096 1560 1656 2070 1916 1562 2077 2643
AL WATER ESIDENTIAL	Total Aug Sep Oct Nov Dec Jan Feb Mar	0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0	218 211 218 211 218 218 218 199 218	207 199 207 199 207 207 189 207	189 183 189 183 189 189 189 174 189	828 12673 839 1369 1472 1629 1863 2482 2485 2676	658 8737 1280 1449 1213 1179 1286 1467 1253 1576	963 10403 977 1484 1456 1721 1273 1772 1822 1892	997 10765 1300 1453 1618 1593 1603 1444 1481 1684	949 12096 1560 1656 2070 1916 1562 2077 2643 1754
DTAL WATER	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr	0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0	218 211 218 211 218 218 218 199 218 211	207 199 207 199 207 207 189 207 189 207	189 183 189 183 189 189 189 174 189 183	828 12673 839 1369 1472 1629 1863 2482 2485 2676 2989	658 8737 1280 1449 1213 1179 1286 1467 1253 1576 1353	963 10403 977 1484 1456 1721 1273 1772 1822 1892 1812	997 10765 1300 1453 1618 1593 1603 1444 1481 1684 1480	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846
TOTAL WATER DN-RESIDENTIAL	Total Aug Sep Oct Nov Dec Jan Feb Mar	0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0	218 211 218 211 218 218 218 199 218	207 199 207 199 207 207 189 207	189 183 189 183 189 189 189 174 189	828 12673 839 1369 1472 1629 1863 2482 2485 2676	658 8737 1280 1449 1213 1179 1286 1467 1253 1576	963 10403 977 1484 1456 1721 1273 1772 1822 1892	997 10765 1300 1453 1618 1593 1603 1444 1481 1684	949 12096 1560 1656 2070 1916 1562 2077 2643 1754
TOTAL WATER NON-RESIDENTIAL	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284	218 211 218 211 218 218 218 218 211 218 211 218 211 218	207 199 207 199 207 207 189 207 199 207 199 207	189 183 189 183 189 189 174 189 183 189 183 189	828 12673 839 1369 1472 1629 1863 2482 2485 2676 2989 2220 1446 1547	658 8737 1280 1449 1213 1179 1286 1467 1253 1576 1353 1354 1354 1312 1200	963 10403 977 1484 1456 1721 1273 1772 1822 1892 1812 1812 1460 1484 1747	997 10765 1300 1453 1618 1593 1603 1444 1481 1684 1480 2023 2065 1808	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722
TOTAL WATER NON-RESIDENTIAL	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	218 211 218 211 218 218 218 218 218 211 218 211	207 199 207 199 207 207 189 207 199 207 199	189 183 189 183 189 189 189 174 189 183 189 183	828 12673 839 1369 1472 1629 1863 2482 2485 2676 2989 2220 1446	658 8737 1280 1449 1213 1179 1286 1467 1253 1576 1353 1354 1312	963 10403 977 1484 1456 1721 1273 1772 1822 1892 1812 1812 1460 1484	997 10765 1300 1453 1618 1593 1603 1603 1603 1444 1481 1684 1480 2023 2065	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577
TOTAL WATER NON-RESIDENTIAL	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284	218 211 218 211 218 218 218 218 211 218 211 218 211 218	207 199 207 199 207 207 189 207 199 207 199 207	189 183 189 183 189 189 174 189 183 189 183 189	828 12673 839 1369 1472 1629 1863 2482 2485 2676 2989 2220 1446 1547	658 8737 1280 1449 1213 1179 1286 1467 1253 1576 1353 1354 1354 1312 1200	963 10403 977 1484 1456 1721 1273 1772 1822 1892 1812 1812 1460 1484 1747	997 10765 1300 1453 1618 1593 1603 1444 1481 1684 1480 2023 2065 1808	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722
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LOT Convers	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	218 211 218 218 218 218 218 218 211 218 211 218 211 218 211 218 2569 0.3441	207 199 207 199 207 189 207 189 207 199 207 207 2434 0.3441 0.838	189 183 183 183 189 174 189 174 189 183 189 2229 0.3441 0.767	828 12673 839 1369 1472 1629 1863 2485 2676 2485 2676 2989 2220 1446 1547 23015 0.3441	658 8737 1280 1449 1213 1179 1286 1467 1253 1576 1353 1576 1353 1354 1312 1200 15923	963 10403 977 1484 1456 1721 1273 1772 1822 1892 1812 1882 1812 1460 1484 1747 18901	997 10765 1300 1453 1603 1603 1603 1603 1444 1481 1684 1481 1684 1480 2023 2065 1808 19552 0.344	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722 22042 0.344
LOT Convers	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total Gon Factor INES CO2e Aug	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 284 284 284	218 211 218 218 218 218 218 218 218 218	207 199 207 199 207 199 207 189 207 199 207 2434 0.3441 0.838 0.3441 0.838	189 183 189 183 189 189 174 189 183 189 183 189 2229 0.3441 0.767	828 12673 839 1369 1472 1629 1863 2482 2676 2989 2220 1446 1547 23015 0.3441 7.920 764	658 8737 1280 1449 1213 1179 1286 1467 1253 1576 1353 1576 1353 1354 1312 1200 15923 0.3441 5.479	963 10403 977 1484 1456 1721 1273 1772 1822 1892 1812 1892 1812 1460 1484 1747 18901	997 10765 1300 1453 1603 1603 1603 1603 1444 1481 1684 1481 1684 1481 2023 2065 1808 19552 0.344 6.72581 6.661	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722 22643 1557 1772 22643 1557 1772 22643 1557 1772 22042 0.344 7.5825283
Convers TON	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total NNES CO ₂ e Aug Sep	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 2341100101111111111111	218 211 218 211 218 218 218 211 218 211 218 218	207 199 207 199 207 189 207 189 207 199 207 207 2434 0.3441 0.838 ubic metern 733 675	189 183 183 183 189 174 189 174 189 183 189 183 189 2229 0.3441 0.767 \$ 561	828 12673 1369 1472 1629 1863 2485 24555 24555 24555 24555 245555 245555 2455555555 245555555555	658 8737 1280 1449 1213 1179 1286 1467 1253 1354 1355 1354 1352 1354 1312 1200 15923 0.3441 5.479 780 641	963 10403 977 1484 1456 1721 1273 1721 1822 1822 1822 1822 1822 1822 1822	997 10765 1300 1453 1618 1593 1603 1444 1481 1481 1481 1481 1480 2023 2065 19552 0.344 6.72581	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1575 1722 22042 0.344 7.5825283 614 673
Convers TON	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total Gon Factor INES CO2e Aug	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 284 284 284	218 211 218 218 218 218 218 218 218 218	207 199 207 199 207 199 207 189 207 199 207 2434 0.3441 0.838 0.3441 0.838	189 183 189 183 189 189 174 189 183 189 183 189 2229 0.3441 0.767	828 12673 839 1369 1472 1629 1863 2482 2676 2989 2220 1446 1547 23015 0.3441 7.920 764	658 8737 1280 1449 1213 1179 1286 1467 1253 1576 1353 1576 1353 1354 1312 1200 15923 0.3441 5.479	963 10403 977 1484 1456 1721 1273 1772 1822 1892 1812 1892 1812 1460 1484 1747 18901	997 10765 1300 1453 1603 1603 1603 1603 1444 1481 1684 1481 1684 1481 2023 2065 1808 19552 0.344 6.72581 6.661	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722 22643 1557 1772 22643 1557 1772 22643 1557 1772 22042 0.344 7.5825283
Convers TON	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jul Total NNES CO ₂ e Aug Sep Oct Nov Dec	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	218 211 218 211 218 218 218 211 218 211 218 211 218 2569 0.3441 0.884 0.884 0.884 0.884 0.884 0.884 0.884	207 199 207 199 207 207 207 199 207 207 207 207 207 207 207 207 207 207	189 183 183 189 174 189 174 189 173 189 183 189 2229 0.3441 0.767 561 561 561 968 1271 377	828 12673 1369 1369 1472 1629 1863 2485 24555 24555 24555 24555 245555 245555 2455555555 2455555555	658 8737 1280 1449 1213 1179 1286 1467 1253 1576 1353 1354 1312 1200 15923 0.3441 5.479 780 641 894 954 532	963 10403 977 1484 1456 1721 1273 1772 1822 1892 1892 1892 1892 1460 1484 1747 18901 0.344 6.502 0.344 6.502	997 10765 1300 1453 1618 1593 1603 1444 1480 2023 2065 1808 19552 0.344 6.72581 0.344 6.72581	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1659 1577 1722 22042 0.344 7.5825283 0.344 614 673 776 798 276
Convers TON	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total Aug Sep Oct Nov Dec Jan Feb Apr May Jun Jul Total	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	218 211 218 211 218 218 218 218 218 218	207 199 207 199 207 199 207 188 207 199 207 207 207 207 207 207 207 207	189 183 189 183 189 189 174 189 183 189 189 2229 0.3441 0.767 551 968 1271 377 550	828 12673 839 1369 1472 1629 1863 2485 2676 2989 2220 1446 1547 23015 0.3441 7.920 764 468 835 1025 462	658 8737 1280 1449 1213 1179 1286 1467 1253 1576 1353 1576 1353 1354 1312 1200 15923 0.3441 5.479 780 641 894 894 954 537	963 10403 977 1484 1456 1721 1273 1772 1822 1892 1812 1822 1892 1812 1460 1484 1747 1890 1460 1484 1747 1890 1 4894 5592	997 10765 1300 1453 1603 1603 1603 1603 1444 1481 1684 1480 2023 2065 1808 19552 0.344 6.72581 0.344 6.72581 0.344 775	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722 22042 0.344 7.5825283 0.344 614 673 776 798 276 798 276 782
Convers TON	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total Gon Factor NES CO2e Aug Sep Oct Nov Dec Jan Feb	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 285 10 10 10 10 10 10 10 10	218 211 211 211 218 218 218 211 218 211 218 2218 2569 0.3441 0.884 0.38440000000000000000000000000000000000	207 199 207 199 207 189 207 199 207 207 207 2434 0.3441 0.838 0.3441 0.838 0.3451 0.638 0.65 859 607 637 767	189 183 183 189 174 189 174 189 183 189 174 189 183 189 2229 0.3441 0.767 5 7 54 561 966 1271 377 590	828 12673 1369 1472 1629 1863 2485	658 8737 1280 1449 1213 1179 1286 1453 1576 1353 1354 1354 1354 1354 1354 1354 1354	963 10403 977 1484 1456 1721 1273 1772 1822 1822 1822 1822 1822 1822 1822	997 10765 1300 1453 1618 1593 1603 1444 1481 1481 1481 1481 1480 2023 2065 1808 19552 0.344 6.72581 0.344 6.72581 6.661 706 839 851 434 7775 831	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722 22042 0.344 7.5825283 614 673 776 614 673 776 8276 788 2276 789 231
Convers TON	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total Aug Sep Oct Nov Dec Jan Feb Apr May Jun Jul Total	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	218 211 218 211 218 218 218 218 218 218	207 199 207 199 207 199 207 188 207 199 207 207 207 207 207 207 207 207	189 183 189 183 189 189 174 189 183 189 189 2229 0.3441 0.767 551 968 1271 377 550	828 12673 839 1369 1472 1629 1863 2485 2676 2989 2220 1446 1547 23015 0.3441 7.920 764 468 835 1025 462	658 8737 1280 1449 1213 1179 1286 1467 1253 1576 1353 1576 1353 1354 1312 1200 15923 0.3441 5.479 780 641 894 894 954 537	963 10403 977 1484 1456 1721 1273 1772 1822 1892 1812 1822 1892 1812 1460 1484 1747 1890 1460 1484 1747 1890 1 4894 5592	997 10765 1300 1453 1603 1603 1603 1603 1444 1481 1684 1480 2023 2065 1808 19552 0.344 6.72581 0.344 6.72581 0.344 775	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722 22042 0.344 7.5825283 0.344 614 673 776 798 276 798 276 782
Convers TON	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Total NNES CO2e Aug Sep Oct Nov Dec Jan Feb Mar Apr May	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0	218 211 218 211 218 218 218 218 218 218	207 199 207 199 207 207 189 207 199 207 207 207 207 207 207 207 207	189 183 183 183 189 174 189 174 189 183 189 2229 0.3441 0.767 50 5 754 561 968 1271 377 590 836 836 567 769	828 12673 1369 1369 1472 1629 1863 2485 245 245 245 245 245 245 245 24	658 8737 1280 1449 1213 1179 1286 1467 1253 1354 1354 1354 1352 1354 1354 1312 1200 15923 0.3441 5.479 0.3441 5.479 780 641 894 954 955 915 580 844	963 10403 977 1484 1456 1721 1273 1772 1822 1892 1812 1460 1484 1747 18901 0.344 6.502 0.344 6.502 0.344 6.502 780 641 894 954 955 935 935 935 9315 580	997 10765 1300 1453 1618 1593 1603 1444 1481 1684 1481 2023 2065 1808 19552 0.344 6.72581 0.344 6.72581 0.344 775 839 861 775 839 851 719 719 719 719 920	949 12096 1560 1656 2070 1916 1562 2643 1754 1856 1659 1577 1722 22042 0.344 614 673 776 614 673 776 788 276 782 761 619 750
	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total Jan Feb Mar Apr May Jun Jul Total Jan Feb Mar Apr May Jun Jun Jul Total Jan Feb Mar Apr May Jun Jun Feb Mar Apr May Jun Jun Feb Mar Apr May Mar Apr	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	218 211 218 211 218 218 218 218 211 218 211 218 211 218 211 218 211 218 211 0.844 0.864 860 860 860 860 860 862 662 662 784 904 1084	207 199 207 199 207 207 207 207 207 207 207 207	189 183 189 183 189 189 174 189 183 189 2229 0.3441 0.767 5 5 5 5 5 5 5 5 5 5 5 7 5 9 9 8 3 5 6 7 7 5 9 9 8 3 5 5 7 7 5 9 9 8 3 5 5 7 7 5 7 7 5 7 7 5 7 7 7 7 7 7 7 7 7 7 7 7 7	828 12673 1369 1369 1472 1629 1863 2485 2485 22676 2387 2220 1446 1427 23015 0.3441 7.920 764 486 835 1025 463 482 1149 818 471 935 633	658 8737 1280 1449 1213 1179 1286 1467 1253 1576 1353 1354 1312 1253 1576 1353 1354 1312 1253 1354 1312 15923 0.3441 5.479 780 0.3441 5.479 780 641 884 954 955 957 925 9915 580 844 861	963 10403 977 1484 1456 1721 1273 1772 1822 1892 1812 1460 1484 1484 1484 1484 1484 1484 1484 148	997 10765 1300 1453 1603 1453 1603 1444 1481 1684 1481 1684 1481 2023 2065 19552 19552 0.344 6.72581 0.344 6.72581 0.344 775 831 775 831 779 745	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722 22042 22042 0.344 614 673 776 788 2204 0.344 673 776 788 2331 761 769 782 931 619 750
Convers TON	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jul Total Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul	0 0 0 0 0 0 0 0 0 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 0 0 0	218 211 211 211 218 218 218 211 218 211 218 211 218 2569 0.3441 0.884 0.384 0.8844 0.8844	207 199 207 199 207 189 207 189 207 207 2434 0.3441 0.838 0.3441 0.638 0.638 0.637 675 905 859 607 633 787 1022 632 748 970 801	189 183 183 189 174 189 174 189 173 189 2229 0.3441 0.767 5 754 561 980 836 567 789 7551	828 12673 839 1369 1472 1629 1863 2485 2676 2989 2220 1446 1547 23015 0.3441 7.920 764 485 835 1025 463 482 1149 818 471 935 633 781	658 8737 1280 1449 1213 1179 1286 1467 1253 1576 1353 1576 1353 1354 1312 1200 15923 0.3441 5.479 780 641 5.479 780 641 5.479 780 641 5.479 955 915 580 844 861 761	963 10403 977 1484 1456 1721 1273 1772 1822 1892 1812 1892 1812 1460 1484 1747 1890 1480 1484 1747 1890 1480 1480 1480 1484 1747 1890 1 894 6.502 780 641 894 954 537 597 925 995 580 844 844 864 875 875 875 875 875 875 875 875 875 875	997 10765 1300 1453 1603 1603 1603 1603 1444 1481 1684 1481 1684 1480 2023 2065 1808 19552 0.344 6.72581 0.344 6.72581 9552 0.344 6.72581 9552 0.344 6.72581 775 831 779 749 749 220 745 664	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722 2043 1577 1772 2043 0.344 7.5825283 614 673 776 798 276 798 276 931 761 619 750 750 750 725
Convers TON	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total Jan Feb Mar Apr May Jun Jul Total Jan Feb Mar Apr May Jun Jun Jul Total Jan Feb Mar Apr May Jun Jun Feb Mar Apr May Jun Jun Feb Mar Apr May Sun Feb Mar Apr	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0	218 211 218 211 218 218 218 218 211 218 211 218 211 218 211 218 211 218 211 0.844 0.864 860 860 860 860 860 862 662 662 784 904 1084	207 199 207 199 207 207 207 207 207 207 207 207	189 183 189 183 189 189 174 189 183 189 2229 0.3441 0.767 5 5 5 5 5 5 5 5 5 5 5 7 5 9 9 8 3 5 6 7 7 5 9 9 8 3 5 6 7 7 5 9 9 8 3 5 5 7 7 5 7 7 5 7 7 5 7 7 5 7 7 7 7 7 7 7 7 7 7 7 7 7	828 12673 1369 1369 1472 1629 1863 2485 2485 22676 2387 2220 1446 1427 23015 0.3441 7.920 764 486 835 1025 463 482 1149 818 471 935 633	658 8737 1280 1449 1213 1179 1286 1467 1253 1576 1353 1354 1312 1253 1576 1353 1354 1312 1253 1354 1312 15923 0.3441 5.479 780 0.3441 5.479 780 641 884 954 955 957 925 9915 580 844 861	963 10403 977 1484 1456 1721 1273 1772 1822 1892 1812 1460 1484 1484 1484 1484 1484 1484 1484 148	997 10765 1300 1453 1603 1453 1603 1444 1481 1684 1481 1684 1481 2023 2065 19552 19552 0.344 6.72581 0.344 6.72581 0.344 775 831 775 831 779 745	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722 22042 22042 0.344 614 673 776 788 2204 0.344 673 776 788 2331 761 769 782 931 619 750
TON Couvers Sundial court: Couvers	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jul Total Gon Factor NES CO2e Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total Gon Factor Mar Apr May Jun Jul Total Gon Factor Mar Apr May Jun Jul Total Gon Factor	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 284 285 29 2 200 0 1 2118 1 1 1 1 1 1 1 1 1 1	218 211 211 213 219 218 211 218 211 218 211 218 22569 0.3441 0.884 0.384	207 199 207 199 207 189 207 199 207 207 2434 0.3441 0.838 0.3441 0.838 0.3441 0.838 0.3441 0.838 0.3441 0.345 0.3441 0.345 0.3441 0.327 0.3441 0.327 0.3441 0.327 0.3441 0.337 0.3441 0.337 0.3441 0.327 0.3441 0.345 0.3441 0.327 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.345 0.355	189 183 183 189 174 189 174 189 183 189 173 189 2229 0.3441 0.767 5 5 754 561 968 1271 377 590 836 567 789 757 789 757 9,101 0.3441 0.3441	828 12673 1369 1472 1629 1863 2485 245 245 245 245 245 245 245 24	658 8737 1280 1449 1213 1179 1286 1453 1575 1354 1354 1354 1354 1354 1354 1354 135	963 10403 977 1484 1456 1721 1273 1772 1822 1822 1822 1822 1822 1822 1822	997 10765 1300 1453 1618 1593 1603 1444 1481 1481 1481 1481 1480 2023 2065 19552 0.344 6.72581 0.344 6.72581 0.344 6.72581 0.344 0.344 0.715 831 434 775 831 434 779 719 719 719 719 719 719 719	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722 22042 0.344 613 758 22042 0.344 673 776 614 673 776 2276 782 931 761 619 750 755 8,454 0.344
TON Couvers Sundial court: Couvers	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jul Jul Total	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 284 284 284 284 284 284	0 0 0 0 0 0 0 0 0 0 0 0 0 0	218 211 218 211 218 218 218 218 211 218 218	207 199 207 199 207 189 207 189 207 207 207 207 2434 0.3441 0.838 0.3441 0.838 0.3441 0.838 0.638 607 603 787 633 787 632 632 748 907 801 9,372	189 183 189 183 189 189 174 189 183 189 2229 0.3441 0.767 5 5 5 5 5 5 5 6 1 377 5 90 980 836 5 67 7 5 9757 5 5 1 9,101	828 12673 1369 1369 1472 1629 1863 2485 2676 2989 2220 1446 1547 23015 0.3441 7.920 764 466 8355 1025 462 462 462 462 462 1149 8482 1149 8482 1149 8482 1863 781 8,842	658 8737 1280 1449 1213 1179 1286 1467 1253 1576 1353 1354 1312 1200 0.3441 5.479 780 641 884 954 537 597 557 580 844 861 781 9,303	963 10403 977 1484 1456 1721 1273 1772 1822 1892 1812 1460 1484 1747 18891 1460 1484 1747 1890 1480 1480 1484 1747 1890 1891 1890 1895 1895 1895 1895 1895 1895 1895 1895	997 10765 1300 1453 1603 1453 1603 1444 1481 1684 1480 2023 2065 1805 2023 2065 1805 19852 19853 198555 198555 1985555 19855555 1985555555555	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722 22042 22042 0.344 7.5825283 0.344 614 673 776 798 276 798 276 782 931 619 750 755 8,454
TON COUNCILS	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jul Total Gon Factor NES CO2e Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total Gon Factor Mar Apr May Jun Jul Total Gon Factor Mar Apr May Jun Jul Total Gon Factor	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 0 0 0	218 211 218 211 218 218 211 218 211 218 211 218 2569 0.3441 0.884	207 199 207 199 207 189 207 189 207 207 207 207 2434 0.3441 0.838 0.3441 0.838 0.3441 0.633 787 663 859 607 663 787 748 905 807 632 748 905 807 801 9,372 0.3441 3.225	189 183 183 189 174 189 174 189 183 189 173 189 2229 0.3441 0.767 5 5 754 561 968 1271 377 590 836 567 789 757 789 757 9,101 0.3441 0.3441	828 12673 1369 1472 1629 1863 2485 245 245 245 245 245 245 245 24	658 8737 1280 1449 1213 1179 1286 1453 1575 1354 1354 1354 1354 1354 1354 1354 135	963 10403 977 1484 1456 1721 1273 1772 1822 1822 1822 1822 1822 1822 1822	997 10765 1300 1453 1618 1593 1603 1444 1481 1481 1481 1481 1480 2023 2065 19552 0.344 6.72581 0.344 6.72581 0.344 6.72581 0.344 0.344 0.715 831 434 775 831 434 779 719 719 719 719 719 719 719	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722 22042 0.344 613 758 22042 0.344 673 776 614 673 776 2276 782 931 761 619 750 755 8,454 0.344
TON Councers TON TON TON TON TON TON TON	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total Gen Feb Mar Feb Mar Apr May Jun Total Gen Feb Mar Apr May Jun Jul Total Gen Feb Mar Apr May Jun Jul Total Gen Feb Mar Apr May Jun Sep Mar Apr May Sep Mar Apr Mar Apr May Sep Mar Apr Mar	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 0 0 0	218 211 218 211 218 219 218 211 218 211 218 22569 0.3441 0.884 0.380 0.3440 0.3441 0.3440 0.3441 0.3440 0.3441 0.3440 0.3441 0.3440 0.3441 0.3440 0.3441 0.3441 0.3441 0.3441 0.3440 0.3441 0.3441 0.3441 0.3441 0.3441 0.3440 0.3441 0.344	207 199 207 199 207 189 207 207 207 207 207 2434 0.3441 0.838 0.3441 0.3441 0.838 0.3441 0.3441 0.838 0.3441 0.3441 0.838 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.337 0.3441 0.345 0.3441 0.345 0.3441 0.345 0.3441 0.345 0.3441 0.345 0.3441 0.345 0.3441 0.345 0.345 0.3441 0.325 0.3441 0.325 0.3441 0.325 0.3441 0.325 0.3441 0.3425 0.3441 0.3425 0.3441 0.3425 0.3441 0.3425 0.3441 0.3425 0.3441 0.3425 0.3441 0.3425 0.3441 0.3425 0.3441 0.3441 0.3425 0.3441 0.3441 0.3425 0.3441	189 183 183 189 174 189 174 189 183 189 183 189 2229 0.3441 0.767 5 0.764 561 968 1271 377 590 836 567 789 757 789 757 789 757 980 836 567 551 9,101 0.3441 3.132	828 828 12673 839 1369 1472 1629 1863 2485 2463 245 245 245 245 245 245 245 245	658 8737 1280 1449 1213 1179 1286 1453 1555 1354 1354 1354 1354 1354 1354	963 10403 977 1484 1456 1721 1273 1772 1822 1822 1822 1822 1822 1822 1822	997 10765 1300 1453 1618 1593 1603 1444 1481 1481 1481 1481 1482 2023 2065 19552 0.344 6.72581 0.344 6.72581 0.344 434 775 831 434 775 831 434 779 719 719 719 719 720 745 600 8,803 0.344 3.028	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722 22042 0.344 614 673 776 0.344 673 776 788 276 789 276 789 276 782 8454 0.344 2.908
	Total Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jul Total Gon Factor NES CO2e Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total Gon Factor Mar Apr May Jun Jul Total Gon Factor Mar Apr May Jun Jul Total Gon Factor	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 284 284 284 284 0.3441 0.098	0 0 0 0 0 0 0 0 0 0 0 0 0 0	218 211 218 211 218 218 211 218 211 218 211 218 2569 0.3441 0.884	207 199 207 199 207 189 207 189 207 207 207 207 2434 0.3441 0.838 0.3441 0.838 0.3441 0.633 787 663 787 663 787 663 787 663 787 748 905 807 607 801 9,372 0.3441 3.225	189 183 183 189 174 189 174 189 183 189 2229 0.3441 0.767 5 754 561 968 1271 377 590 5 754 561 968 1271 377 590 5 5 754 561 968 1271 377 590 5 5 754 5 5 754 5 754 5 754 5 754 5 754 5 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 757 9,101 0.3441	828 12673 1369 1472 1629 1863 2485 245 245 245 245 245 245 245 24	658 8737 1280 1449 1213 1179 1286 1453 1575 1354 1354 1354 1354 1354 1354 1354 135	963 10403 977 1484 1456 1721 1273 1772 1822 1822 1822 1822 1822 1822 1822	997 10765 1300 1453 1618 1593 1603 1444 1481 1481 1481 1481 1480 2023 2065 19552 0.344 6.72581 0.344 6.72581 0.344 6.72581 0.344 8.803 0.344	949 12096 1560 1656 2070 1916 1562 2077 2643 1754 1846 1659 1577 1722 22042 0.344 613 758 22042 0.344 673 776 614 673 776 2276 782 931 761 619 750 755 8,454 0.344

Water & Waste Water

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	Monih Aug	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11 94	2011-12 89	2012-13 82	2013-14 300	2014-15 461	2015-16 351	2016-17 470	2017-18 613
	Sep						91	86	79	496	524	538	526	601
E.	Oct						94	89	82	533	437	527	587	753
	Nov Dec						91 94	86 89	79 82	591 676	426 465	625 460	578 581	696 566
2	Jan						94	89	82	904	531	643	523	755
<u></u>	Feb						86	82	57	906	453	662	537	964
SILK STREET	Mar						94 91	89 86	82 79	975 1,091	571 490	687 658	611 536	637 671
	Apr May						94		82	1,091 808	490 490	529	- 330 735	602
0)	Jun						91	86	79	524	475	538	751	572
	Jul		_				94	89	82	545	433	634	657	625
	Total	0	0	0	D	0	1,108	1,049	947	8,348	5,755	6,852	7,092	8,054
	Aug						11	10	9	17	17	17	17	17
~	Sep						10	10 10	9 9	16	16 17	16	16 17	16
苗	Oct Nov						11 10	10	9	17 16	16	17 16	16	17 16
정변	Dec						11	10	9	17	17	17	17	17
HN HOSI ANNEXE	Jan						11	10	9	17	17	17	17	17
⇒ ₹	Feb Mar						10 11	9 10	9 9	16 17	16 17	16 17	16 17	<u>16</u> 17
T A	Apr						10	10	9	16	16	16	16	16
JOHN HOSIER ANNEXE	May						11	10	9	17	17	17	17	17
1 - C	Jun Jul	118	118	118	118	118	10 11	10 10	<u>9</u> 9	16 17	16 17	16 17	16 17	<u>16</u> 17
	Total	118	118	118	118	118	127	119	108	201	201	201	201	201
											_			
	Aug Sep						2	2	2		2			
<u> </u>	Oct						2	2	2		2			
9 ,	Nov						2	2	2					
5 2	Dec Jan						2	2	2					
JOHN TRUNDLE COURT	Feb						2	2	1		1			
ν μ	Mar						2	2	2					
T T	Apr May						2	2	2					
2	Jun						2	2	2					
	Jul Total	23 23	23 23	23 23	23 23	23 23	2	2	2	23 23	6	0	0	0
		23	23	23		23	<u></u>			~	•			
	Aug									379	581	442	592	664
5	Sep Oct									624 671	660 550	678 664	663 739	757 949
5	Nov									745	536	787	728	877
8	Dec Jan									852 1,139	586 669	579 810	732 659	713 952
ž	Feb									1,141	571	835	677	1,214
ō	Mar									1,229	720	866	770	802
5	Apr May									1,374 1,018	617 617	829 666	676 927	845 758
MILTON COURT	Jun									660	598	678	946	721
	Jul Total	0	0	0	0	0	0	0	0	687 10518.656	546 7251.5772	799 8634.125	827 8935.3152	787
			-		-				<u> </u>	100100000	12.01.0012	000120	COMPANIE.	Teres and
									93	696				4.000
7		•	•		•	•	40.7					044	4.070	
	Aug	0	0	0	0	0	107 103	101 98			1,062	811 1.232	1,079 1,206	<u>1,295</u> 1,374
	Sep Oct	0 0	0 0	0 0 0	0 0 0	0 0	103 107	98 101	90 93	1,136 1,221	1,202 1,006	1,232 1,208	1,206 1,343	1,374 1,719
	Sep Oct Nov	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	103 107 103	98 101 98	90 93 90	1,136 1,221 1,352	1,202 1,006 979	1,232 1,208 1,429	1,206 1,343 1,322	1,374 1,719 1,590
VATE	Sep Oct	0 0	0 0	0 0	0 0	0 0	103 107	98 101	90 93	1,136 1,221 1,352 1,546	1,202 1,006 979 1,068	1,232 1,208 1,429 1,056	1,206 1,343 1,322 1,330	1,374 1,719 1,590 1,296
WATE	Sep Oct Nov Dec Jan Feb	0 0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	103 107 103 107 107 98	98 101 98 101 101 93	90 93 90 93 93 93 67	1,136 1,221 1,352 1,546 2,060 2,062	1,202 1,006 979 1,068 1,218 1,040	1,232 1,208 1,429 1,056 1,471 1,513	1,206 1,343 1,322 1,330 1,199 1,229	1,374 1,719 1,590 1,296 1,724 2,194
AL WATE	Sep Oct Nov Dec Jan Feb Mar	0 0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	103 107 103 107 107 98 107	98 101 98 101 101 93 101	90 93 90 93 93 67 93	1,136 1,221 1,352 1,546 2,060 2,062 2,221	1,202 1,006 979 1,068 1,218 1,218 1,040 1,308	1,232 1,208 1,429 1,056 1,471 1,513 1,570	1,206 1,343 1,322 1,330 1,199 1,229 1,398	1,374 1,719 1,590 1,296 1,724 2,194 1,456
DTAL WATE	Sep Oct Nov Dec Jan Feb	0 0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	103 107 103 107 107 98	98 101 98 101 101 93	90 93 90 93 93 93 67	1,136 1,221 1,352 1,546 2,060 2,062 2,221 2,481 1,842	1,202 1,006 979 1,068 1,218 1,040	1,232 1,208 1,429 1,056 1,471 1,513 1,570 1,504	1,206 1,343 1,322 1,330 1,199 1,229	1,374 1,719 1,590 1,296 1,724 2,194 1,456 1,532
TOTAL WATER	Sep Oct Nov Dec Jan Feb Mar Apr May Jun	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 103 107 107 98 107 103 107 103	98 101 98 101 101 93 101 98 101 98	90 93 93 93 67 93 93 90 90	1,136 1,221 1,352 1,546 2,060 2,062 2,221 2,481 1,842 1,200	1,202 1,006 979 1,068 1,218 1,218 1,218 1,218 1,208 1,123 1,124 1,089	1,232 1,208 1,429 1,056 1,471 1,513 1,570 1,570 1,504 1,212 1,232	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,679 1,714	1,374 1,719 1,590 1,296 1,724 2,194 1,456 1,532 1,377 1,309
TOTAL WATER NON-RESIDENTIAL	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jun	0 0 0 0 0 0 0 0 0 0 0 0 0 141	0 0 0 0 0 0 0 0 0 0 0 0 0 141	0 0 0 0 0 0 0 0 0 0 0 0 0 141	0 0 0 0 0 0 0 0 0 0 0 0 141	0 0 0 0 0 0 0 0 0 0 0 0 0 141	103 107 103 107 107 98 107 103 107 103 107	98 101 98 101 101 93 101 98 101 98 101	90 93 90 93 93 93 95 93 90 90 93	1,136 1,221 1,332 1,546 2,060 2,062 2,221 2,481 1,842 1,200 1,273	1,202 1,006 979 1,068 1,218 1,040 1,308 1,123 1,124 1,089 996	1,232 1,208 1,429 1,055 1,471 1,513 1,570 1,570 1,570 1,514 1,212 1,232 1,450	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,679 1,714 1,501	1,374 1,719 1,590 1,296 1,724 2,194 1,456 1,532 1,377 1,309 1,430
TOTAL WATE	Sep Oct Nov Dec Jan Feb Mar Apr May Jun	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 103 107 107 98 107 103 107 103	98 101 98 101 101 93 101 98 101 98	90 93 93 93 67 93 93 90 90 90	1,136 1,221 1,332 1,546 2,060 2,062 2,221 2,481 1,842 1,200 1,273	1,202 1,006 979 1,068 1,218 1,040 1,308 1,123 1,124 1,089 996	1,232 1,208 1,429 1,055 1,471 1,513 1,570 1,570 1,570 1,514 1,212 1,232 1,450	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,679 1,714	1,374 1,719 1,590 1,296 1,724 2,194 1,456 1,532 1,377 1,309 1,430
	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total	0 0 0 0 0 0 0 0 0 0 0 0 141 141	0 0 0 0 0 0 0 0 0 0 0 141 141	0 0 0 0 0 0 0 0 0 0 141 141	0 0 0 0 0 0 0 0 0 141 141	0 0 0 0 0 0 0 0 0 141 141	103 107 103 107 107 98 107 103 107 103 107 1259	98 101 98 101 101 93 101 98 101 98 101 1192	90 93 93 93 93 93 93 93 90 93 90 93 1078	1,136 1,221 1,332 1,546 2,060 2,062 2,222 2,222 2,222 2,481 1,842 1,200 1,273 19990,933	1,202 1,006 979 1,068 1,218 1,040 1,308 1,123 1,124 1,089 996 13213.934	1,232 1,208 1,429 1,056 1,471 1,513 1,570 1,570 1,570 1,570 1,212 1,232 1,450 15687.74	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,679 1,714 1,501 1,501	1,374 1,719 1,590 1,296 1,724 2,194 1,456 1,552 1,377 1,309 1,430 18295.05
Conversion	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total	0 0 0 0 0 0 0 0 0 0 0 0 0 141	0 0 0 0 0 0 0 0 0 0 0 0 0 141	0 0 0 0 0 0 0 0 0 0 0 0 0 141	0 0 0 0 0 0 0 0 0 0 0 0 141	0 0 0 0 0 0 0 0 0 0 0 0 0 141	103 107 103 107 107 98 107 103 107 103 107	98 101 98 101 101 93 101 98 101 98 101	90 93 90 93 93 93 95 93 90 90 93	1,136 1,221 1,332 1,546 2,060 2,062 2,221 2,481 1,842 1,200 1,273	1,202 1,006 979 1,068 1,218 1,040 1,308 1,123 1,124 1,089 996	1,232 1,208 1,429 1,055 1,471 1,513 1,570 1,570 1,570 1,514 1,212 1,232 1,450	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,679 1,714 1,501	1,374 1,719 1,590 1,296 1,724 2,194 1,456 1,532 1,377 1,309 1,430
Conversion	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total	0 0 0 0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	103 107 103 107 107 98 107 103 107 103 107 1259	98 101 98 101 101 93 101 98 101 98 101 1192 0.70850	90 93 93 93 93 67 93 90 90 90 90 90 90 90 90 90 0.70850	1,136 1,221 1,332 2,060 2,062 2,221 2,481 1,842 1,200 1,273 19090.933	1,202 1,006 979 1,068 1,218 1,040 1,308 1,123 1,124 1,089 996 13213934	1,232 1,208 1,429 1,055 1,471 1,513 1,570 1,570 1,570 1,212 1,232 1,450 1,5687.74	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,679 1,714 1,501 16227,972	1,374 1,719 1,590 1,296 1,724 2,194 1,436 1,532 1,309 1,430 18295.05
Conversion	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total	0 0 0 0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	103 107 103 107 107 98 107 103 107 103 107 1259	98 101 98 101 101 93 101 98 101 98 101 1192 0.70850	90 93 93 93 93 67 93 90 90 90 90 90 90 90 90 90 0.70850	1,136 1,221 1,332 2,060 2,062 2,221 2,481 1,842 1,200 1,273 19090.933	1,202 1,006 979 1,068 1,218 1,040 1,308 1,123 1,124 1,089 996 13213934	1,232 1,208 1,429 1,055 1,471 1,513 1,570 1,570 1,570 1,212 1,232 1,450 1,5687.74	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,679 1,714 1,501 16227,972	1,374 1,719 1,590 1,296 1,724 2,194 1,436 1,532 1,309 1,430 18295.05
Conversion	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jun Jun Jun Jun Jun Sco ₂ e	0 0 0 0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 103 107 107 98 107 103 107 103 107 1259 0.70850 0.892	98 101 98 99 93 93 93 101 98 101 98 101 1192 0.70850 0.845	90 93 93 93 93 93 93 90 93 90 93 90 93 1078 0.70850 0.764	1,136 1,221 1,352 2,060 2,060 2,221 1,842 1,200 1,273 19090,933 0,70850 13,526	1,202 1,006 979 1,068 1,218 1,218 1,218 1,213 1,123 1,124 1,123 1,124 1,123 1,124 1,123 1,124 1,089 995 13213,934	1,232 1,208 1,429 1,056 1,471 1,513 1,570 1,514 1,514 1,514 1,514 1,212 1,232 1,450 1,450 1,450 1,450 1,450 1,450 1,450 1,450 1,450 1,450 1,450 1,451 1,511 1,512 1,512 1,513 1,514 1,513 1,5141	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,679 1,579 1,571 1,579 1,714 1,501 1627/972 0.708 11.489404	1.374 1.719 1.590 1.296 1.724 2.194 1.436 1.532 1.377 1.309 1.4300 1.43000 1.43000 1.43000 1.43000000000000000000000000000000000000
Conversion TONNE	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Totel Factor S CO ₂ e	0 0 0 0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 103 107 107 98 107 103 107 103 107 103 107 1259	98 101 98 101 93 93 101 98 101 98 101 1192 0.70850 0.845	90 93 93 93 93 93 93 90 93 90 93 1078 0.70850 0.764	1,136 1,221 1,352 2,060 2,062 2,221 2,481 1,842 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,3526 1,3526 1,3526 1,3526 1,352 1,354 1,201 1,354 1,255 1,	1,302 1,006 979 1,068 1,218 1,040 1,308 1,123 1,124 1,123 1,124 1,089 995 1321,1334 0.70850 9,362	1,232 1,223 1,423 1,656 1,671 1,570 1,570 1,570 1,570 1,212 1,232 1,250 1,212 1,232 1,250 1,212 1,250 1,212 1,250 1,212 1,250 1,212 1,250 1,212 1,250 1,212	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,228 1,679 1,228 1,228 1,501 1,501 1,501 1,501 1,501 1,489404 11.489404	1,374 1,719 1,590 1,296 1,724 2,194 1,436 1,532 1,309 1,430 18295.05
Conversion TONNE	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total Factor S CO ₂ e	0 0 0 0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 103 107 107 98 107 98 103 107 103 107 103 107 103 107 103 107 103 107 103 107 1050 0.892	98 99 98 99 101 93 93 99 98 98 98 98 98 98 98 98 98 98 90 98 98 98 98 98 98 98 98 98 98 98 98 98	90 93 90 93 93 93 93 93 90 93 90 93 90 93 1078 0.70850 0.764 0.764 9784 561 998	1,136 1,221 1,342 2,060 2,060 2,261 2,241 1,842 1,200 1,273 19090,933 19090,933 0,70850 13.526	1,302 1,006 979 1,068 1,218 1,040 1,208 1,123 1,124 1,089 995 13213344 0,70850 9,362	1,222 1,208 1,429 1,457 1,513 1,514 1,513 1,504 1,513 1,504 1,212 1,222 1,450 1,222 1,450 0,708 11.107	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,679 1,501 1,501 1,501 1,501 1,501 1,501 1,501 1,501 1,501 1,501 1,501 1,501 549 549 586 696	1,374 1,719 1,290 1,296 1,724 2,194 1,426 1,532 1,377 1,309 1,430 1,309 1,430 1,309 1,430 1,309 1,309 1,309 1,309 1,309 1,309 1,209 1,309
Conversion TONNE	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Totel Factor S CO ₂ e	0 0 0 0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 103 107 98 107 98 107 107 107 107 107 107 107 107 107 107	98 99 98 101 93 93 101 93 101 98 98 101 1192 0.70850 0.845 0.845 0.845	90 93 99 93 57 93 90 93 93 90 93 93 90 93 93 1078 0.70850 0.764 2551 5551 5551	1,136 1,221 1,362 2,060 2,060 2,062 2,221 2,241 1,842 1,273 19090,933 19090,933 19090,933 19090,933 13,526 534 403 863	1,302 1,006 979 1,068 1,218 1,040 1,208 1,123 1,124 1,124 1,124 1,124 1,124 1,124 1,124 1,124 1,324 1,	1,222 1,208 1,429 1,666 1,513 1,570 1,514 1,512 1,520 1,520 1,520 1,620	1,206 1,343 1,322 1,330 1,229 1,229 1,229 1,228 1,228 1,228 1,228 1,250 1,250 1,250 1,250 1,489404 0,708 11,489404	1,374 1,719 1,590 1,296 1,724 2,194 1,456 1,329 1,339 1,430 1,430 1,430 1,29529 0,708 12,9529 0,708 12,9529 550 559 644
Conversion TONNE	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Total Factor S CO ₂ e	0 0 0 0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 103 107 107 98 107 98 103 107 103 107 103 107 103 107 103 107 103 107 103 107 1050 0.892	98 99 98 99 101 93 93 99 98 98 98 98 98 98 98 98 98 98 90 98 98 98 98 98 98 98 98 98 98 98 98 98	90 93 90 93 93 93 93 93 90 93 90 93 90 93 1078 0.70850 0.764 0.764 9784 561 998	1,136 1,221 1,342 2,060 2,060 2,261 2,241 1,842 1,200 1,273 19090,933 19090,933 0,70850 13.526	1,202 1,006 979 1,068 1,218 1,040 1,208 1,123 1,124 1,089 995 13213344 0,70850 9,362	1,222 1,208 1,429 1,457 1,513 1,514 1,513 1,504 1,513 1,504 1,212 1,222 1,450 1,222 1,450 0,708 11.107	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,679 1,501 1,501 1,501 1,501 1,501 1,501 1,501 1,501 1,501 1,501 1,501 1,501 549 549 586 696	1,374 1,719 1,290 1,296 1,724 2,194 1,426 1,532 1,377 1,309 1,430 1,309 1,430 1,309 1,430 1,309 1,309 1,309 1,309 1,309 1,309 1,209 1,309
Conversion TONNE	Sep Oct Nov Dec Jan Feb Mar Apr May Jul Jul Jul Totel Factor S CO ₂ e	0 0 0 0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 0 0 0 141 141 141 0.70850 0.100 0 578 900 578 900 578 4 582 230	103 107 103 107 107 98 107 103 107 103 107 103 107 103 107 103 107 1259 0.70850 0.892 0.70850 0.892 324 412 425 334 334 334	98 101 98 101 93 101 93 101 98 101 101 1192 0.70850 0.845 0.70850 0.845 0.70850 0.845 0.70850 0.77850 0.777500 0.777500 0.777500 0.777500 0.777500 0.777500 0.7775000 0.7775000 0.7775000 0.7775000000000000000000000000000000000	90 93 90 93 57 93 93 90 93 93 90 93 93 93 93 93 93 93 93 93 93 93 93 93	1,136 1,221 1,352 2,060 2,062 2,241 1,842 1,273 1,275 1,275 1,275	1,302 1,006 979 1,068 1,218 1,040 1,308 1,123 1,124 1,123 1,124 1,123 1,124 1,123 1,124 1,089 1,321 1,936 1,221 1,936 1,221 1,936 1,221 1,936 1,221 1,936 1,221 1,218 1,	1,232 1,208 1,429 1,656 1,513 1,570 1,514 1,510 1,510 1,500 1,500 1,500 1,500 1,500 1,500 1,212 1,220 1,220 1,220 1,200	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,579 1,579 1,571 1,501 1,501 1,501 1,501 1,501 1,501 1,501 1,501 1,489404 1,489404 549 549 549 549 549 549 549 549 549 54	1,374 1,719 1,590 1,296 1,226 1,724 2,194 1,455 1,377 1,360 1,430 1,430 1,430 1,229 0,708 12,9529 510 559 644 662 229 649 773
Conversion TONNE	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jun Jun Jun Jun Jun Jun Total Feb Nay Cose Oct Nov Dec Sep Oct Nov Dec Sep Oct Nov Sep Oct Nov Sep Oct Nov Nov Nov Nov Nov Nov Nov Nov Nov Nov	0 0 0 0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 107 107 98 107 98 107 98 103 107 103 107 103 107 103 107 103 107 103 107 105 0 0.892 30 412 425 412 425 334 334 334	98 99 99 99 90 93 90 98 98 98 98 1001 98 98 98 00 0.845 0.70850 0.845 0.70850 0.845 0.70850 0.845 0.75 807 574 787	90 93 99 93 67 93 90 90 93 90 93 90 93 10/78 0.70850 0.764 0.70850 0.764 0.70850 0.764 98 98 1271 350 988 1271 350 9836	1,136 1,221 1,342 2,060 2,060 2,261 2,241 1,842 1,200 1,273 19090,933 19090,933 19090,933 19090,933 19090,933 19090,933 19090,933 19090,933 19090,933 19090,933 19090,933 19090,933 19090,935 19000,935 19090,935 19090,935 19090,935 19090,935 19090,935 19090,935 19090,935 19090,935 19090,935 190000,935 1900000,955 190000000000000000000000000000000000	1,202 1,006 1,218 1,218 1,218 1,24 1,123 1,124 1,124 1,124 1,124 1,124 1,124 995 13213344 0,70850 9,362 0,70850 9,362	1,222 1,208 1,429 1,457 1,513 1,574 1,513 1,504 1,212 1,222 1,450 0,708 11,407 0,708 11,407 0,708 11,407 0,708 11,407 0,708 11,407 0,708 11,407 0,708 11,407 1,222 1,420 1,222 1,420 1,222 1,420 1,222 1,420 1,221 1,513 1,504 1,221 1,222 1,420 1,221 1,513 1,504 1,222 1,420 1,222 1,222 1,420 1,222 1,222 1,225 1,255	1,206 1,343 1,322 1,330 1,229 1,338 1,228 1,679 1,228 1,679 1,228 1,228 1,571 1,500 1,500 1,	1,374 1,719 1,290 1,295 1,724 2,194 1,435 1,309 1,430 1,309 1,430 1,309 1,430 1,309 1,309 1,430 1,229 5,05 5,000 5,00 5,000
Conversion TONNE	Sep Oct Nov Dec Jan Feb Mar Apr May Jul Jul Jul Totel Factor S CO ₂ e	0 0 0 0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 0 0 0 141 141 141 0.70850 0.100 0 578 900 578 900 578 4 582 230	103 107 103 107 107 98 107 103 107 103 107 103 107 103 107 103 107 1259 0.70850 0.892 0.70850 0.892 324 412 425 334 334 334	98 101 98 101 93 101 93 101 98 101 101 1192 0.70850 0.845 0.70850 0.845 0.70850 0.845 0.70850 0.77850 0.777500 0.777500 0.777500 0.777500 0.777500 0.777500 0.7775000 0.7775000 0.7775000 0.7775000000000000000000000000000000000	90 93 90 93 57 93 93 90 93 93 90 93 93 93 93 93 93 93 93 93 93 93 93 93	1,136 1,221 1,352 2,060 2,062 2,241 1,842 1,273 1,275 1,275 1,275	1,302 1,006 979 1,068 1,218 1,040 1,308 1,123 1,124 1,123 1,124 1,123 1,124 1,123 1,124 1,089 1,321 1,936 1,221 1,936 1,221 1,936 1,221 1,936 1,221 1,936 1,221 1,218 1,	1,232 1,208 1,429 1,656 1,513 1,570 1,514 1,510 1,510 1,500 1,500 1,500 1,500 1,500 1,500 1,212 1,220 1,220 1,220 1,200	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,579 1,579 1,571 1,501 1,501 1,501 1,501 1,501 1,501 1,501 1,501 1,489404 1,489404 549 549 549 549 549 549 549 549 549 54	1,374 1,719 1,290 1,296 1,296 1,224 2,194 1,322 1,337 1,339 1,435 1,339 1,435 1,339 1,435 1,339 1,435 1,329 1,
Conversion	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Total Total Total Total Sep Oct Sco ₂ e	0 0 0 0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 103 107 107 98 107 107 98 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 98 103 107 107 98 103 107 107 98 103 107 107 98 103 107 107 98 103 107 107 107 107 107 107 107 107 107 107	98 99 98 99 99 99 99 99 99 99 99 99 99 9	90 93 99 93 83 67 93 93 90 93 93 93 93 93 93 93 93 90 90 93 93 90 90 93 93 90 90 93 93 90 90 93 93 90 90 93 93 90 90 93 92 93 92 93 92 93 92 93 92 93 92 93 92 93 92 93 93 92 93 93 92 93 93 92 93 93 93 93 93 93 93 93 93 93 93 93 93	1,136 1,221 1,352 2,060 2,062 2,221 2,241 1,842 1,220 1,223 1,220 1,223 1,220 1,223 1,220 1,223 1,223 1,223 1,223 1,223 1,223 1,223 1,223 1,223 1,223 1,223 1,223 1,223 1,223 1,224 1,244	1,302 1,006 979 1,068 1,218 1,040 1,208 1,123 1,124 1,124 1,089 995 1321334 0,70850 9,362	1,222 1,208 1,429 1,646 1,513 1,570 1,514 1,514 1,514 1,514 1,514 1,514 1,504 1,222 1,450 1,222 1,450 0,708 0,709 0,708 0,709 0,709 0,709 0,709 0,700 0,000000	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,228 1,228 1,228 1,228 1,579 1,229 1,398 1,229 1,279 1,501 1,501 1,501 1,501 1,489404 11.489404 11.489404 549 586 596 596 596 596 596 596 596 596 596	1,374 1,719 1,290 1,296 1,226 1,724 2,194 1,430 1,532 1,309 1,205 1,309 1,205 1,
Conversion TONNE	Sep Oct Nov Dec Jan Feb Mar Apr May Jul Jul Jul Total Factor S CO ₂ e	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 141 141 141	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 103 107 107 98 107 107 103 107 107 107 107 107 107 107 107 107 107	98 101 98 101 93 101 93 101 98 101 1192 0.70850 0.775 0.775 0.7787 0.7787 0.7788 0.7787 0.7788 0.7787 0.7788 0.7787 0.7787 0.7788 0.7787 0.7788 0.7787 0.7787 0.7788 0.7787 0.7787 0.7788 0.7787 0.7788 0.7787 0.7787 0.7788 0.7787 0.7787 0.7788 0.7787 0.7787 0.7788 0.7787 0.7788 0.7787 0.7787 0.7788 0.7787 0.7787 0.7788 0.7787 0.7788 0.7787 0.7787 0.7788 0.7787 0.7787 0.7788 0.7787 0.7787 0.7788 0.7787 0.7787 0.7788 0.7787 0.7787 0.7788 0.7787 0.77	90 93 90 93 57 93 90 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 90 93 93 90 93 90 90 90 93 90 90 90 90 90 90 90 90 90 90 90 90 90	1,136 1,221 1,352 2,060 2,062 2,261 1,273 1,842 1,273 1,842 1,273 1,842 1,273 1,842 1,273 1,842 1,273 1,3526 0,70850 13,526 13,526 13,526 13,526 13,526 13,526 13,526 13,526 13,526 13,526 13,526 13,526 13,546 12,737 13,526 13,526 13,546 12,737 13,546 12,737 13,546 13,546 12,737 13,546 13,556 14,5566 14,5566 14,5566 14,5566 14,5566 14,5566 14,5566 14,5566 14,	1,202 1,006 979 1,068 1,218 1,218 1,218 1,213 1,124 1,123 1,124 1,124 1,123 1,124 1,124 1,123 1,124 1,124 1,029 1,221 1,213 996 9,362 9,36	1,232 1,208 1,429 1,056 1,513 1,570 1,510 1,510 1,510 1,510 1,520	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,579 1,579 1,5711	1,374 1,719 1,590 1,296 1,226 1,226 1,226 1,377 1,320 1,430 1,430 1,430 1,430 1,430 1,229 0,708 12,9529 0,708 12,9529 510 550 550 550 550 550 550 550
RESIDENTIAL: SUNDIAL COURT	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Total Feb Nov Dec Sep Oct ScO ₂ e	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 141 141 141 0.70850 0.100	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 103 107 98 107 98 107 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 98 103 107 98 103 107 98 103 107 98 103 107 98 103 107 98 103 107 107 98 103 107 107 98 103 107 107 107 98 103 107 107 107 98 103 107 107 107 107 107 107 107 107 107 107	98 99 98 101 93 101 93 101 98 98 101 1192 0.70850 0.845 0.84	90 93 99 93 67 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 90 93 90 93 90 93 90 93 90 93 90 93 90 90 93 90 90 93 90 90 93 90 90 90 93 90 90 90 93 90 90 90 93 90 90 90 90 90 90 90 90 90 90 90 90 90	1,136 1,221 1,362 2,060 2,062 2,221 2,241 1,842 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,275	1,202 1,006 979 1,068 1,218 1,040 1,208 1,123 1,124 1,124 1,124 1,124 1,029 9995 1321,1334 0,70850 9,362 9,562 9,5	1,232 1,208 1,429 1,656 1,570	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,228 1,228 1,228 1,228 1,229 1,579 1,579 1,579 1,579 1,579 1,579 1,579 1,579 1,591 1,489404 11.489404 11.489404 11.489404 11.489404 549 586 890 596 596 596 596 596 596 596 596 590 590 590 590 590 590 590 590 590 590	1,374 1,719 1,290 1,296 1,226 1,724 2,194 1,436 1,309 1,400 1,
Conversion SUNDIAL COURT SUNDIAL COURT	Sep Oct Nov Dec Jan Feb Mar Jul Total Feb Mar Jul Total ScO2e	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 103 107 107 98 103 107 103 103 107 1259 0.70850 0.892 0.70850 0.892 0.70850 0.892 304 412 304 334 334 334 334 334 334 334 334 334	98 99 99 99 101 93 99 99 99 101 1192 0.70850 0.845 0.70850 0.845 0.70850 0.845 0.70850 0.845 1.210 575 8305 8305 8305 8307 574 8301 8301 8301 8301 8301 8301 8301 8301	90 93 99 93 67 93 90 93 90 93 90 93 90 93 90 90 93 90 90 93 90 90 93 90 90 93 90 90 93 90 93 90 93 90 93 90 93 90 93 90 93 90 93 90 93 90 93 90 93 90 93 90 90 93 90 90 93 90 90 93 90 90 93 90 90 90 93 90 90 90 90 90 90 90 90 90 90 90 90 90	1,136 1,221 1,352 2,060 2,062 2,261 1,842 1,200 1,273 19090,933 19090,933 0,70850 13,526 634 400 903 851 334 400 903 851 334 400 903 851 334 400 903 851 334 400 955 868 8691	1,302 1,006 1,218 1,040 1,223 1,123 1,124 1,040 1,123 1,124 1,029 996 13213.934 0,70850 9,362 9,562 9,579 9,	1,222 1,228 1,229 1,429 1,421 1,513 1,570 1,514 1,513 1,504 1,514 1,222 1,450 1,222 1,450 0,708 11,107 0,708 11,107 647 532 742 742 742 742 742 742 742 74	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,679 1,228 1,679 1,228 1,501 16227,972 0,708 11,489404 0,708 11,489404 549 549 549 549 549 549 549 54	1,374 1,719 1,290 1,296 1,296 1,224 2,194 1,322 1,337 1,309 1,435 1,309 1,435 1,309 1,430 1,430 1,309 1,430 1,229 5,209 5,000 5,000 5,000 5,000 5,000 5,000 5,000 5,000 5,000 5,000 5,000 5,00
Conversion SUNDIAL COURT SUNDIAL COURT	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Total Feb Nov Dec Sep Oct ScO ₂ e	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 141 141 141 0.70850 0.100	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 103 107 98 107 98 107 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 107 98 103 107 107 98 103 107 107 98 103 107 107 98 103 107 107 107 98 103 107 107 107 98 103 107 107 107 107 107 107 107 107 107 107	98 99 98 101 93 101 93 101 98 98 101 1192 0.70850 0.845 0.84	90 93 99 93 67 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 93 90 93 90 93 90 93 90 93 90 93 90 93 90 93 90 90 93 90 90 93 90 90 93 90 90 90 93 90 90 90 93 90 90 90 93 90 90 90 90 90 90 90 90 90 90 90 90 90	1,136 1,221 1,362 2,060 2,062 2,221 2,241 1,842 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,200 1,273 1,275	1,202 1,006 979 1,068 1,218 1,040 1,208 1,123 1,124 1,124 1,124 1,124 1,029 9995 1321,1334 0,70850 9,362 9,562 9,5	1,232 1,208 1,429 1,656 1,570	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,228 1,228 1,228 1,228 1,229 1,579 1,579 1,579 1,579 1,579 1,579 1,579 1,579 1,591 1,489404 11.489404 11.489404 11.489404 11.489404 549 586 890 596 596 596 596 596 596 596 596 590 590 590 590 590 590 590 590 590 590	1,374 1,719 1,290 1,296 1,226 1,724 2,194 1,436 1,309 1,400 1,
COURT SUNDIAL COURT SUNDAL SUNDAL SUN	Sep Oct Nov Dec Jan Feb Mar Jul Total Feb Mar Jul Total ScO2e	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 107 107 98 107 98 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 0.892 0.992 0.99	98 99 99 99 90 99 99 99 99 99 99 99 99 99	90 93 99 93 67 93 90 93 90 93 90 93 90 93 90 90 93 90 90 93 90 90 93 90 90 93 90 90 93 90 90 93 90 90 93 90 93 90 90 93 90 90 93 90 90 93 90 90 93 90 90 93 90 90 93 90 90 93 90 90 90 90 90 90 90 90 90 90 90 90 90	1,136 1,221 1,352 2,660 2,062 2,241 1,842 1,200 1,273 19090,933 19090,933 0,70850 13,526 634 400 954 400 954 634 400 954 6691 0,70850 4,740	1,302 1,006 1,008 1,218 1,040 1,223 1,123 1,124 1,040 9,06 1,123 1,124 1,039 9,06 1,321,3934 0,70850 9,362 9,562 9	1,222 1,228 1,429 1,427 1,650 1,513 1,504 1,513 1,504 1,212 1,222 1,450 1,222 1,222 1,450 1,222 1,450 1,222 1,450 1,222 1,450 1,222 1,450 1,222 1,450 1,222 1,450	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,679 1,501 1,	1,374 1,719 1,290 1,296 1,224 2,194 1,322 1,337 1,309 1,435 1,309 1,435 1,309 1,430 1,309 1,430 1,309 1,400 1,
	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Total Total Factor S CO ₂ e	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 141 141 141 0.70850 0.100	0 0 0 0 0 0 0 0 0 0 141 141 0.70850 0.100	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 103 107 107 98 107 107 98 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 107 107 107 107 107 107 107 107 107	98 99 101 98 99 101 93 101 98 98 101 1192 0.70850 0.845 0.70850 0.845 0.70850 0.845 1,210 675 905 839 607 574 787 787 787 1,022 839 801 8,819 9 0.70850 6.248	90 93 99 93 67 93 93 90 93 93 90 93 93 93 0.708 0.708 0.708 0.704 0.704 0.704 0.704 0.704 0.704 0.704 0.705 0.755	1,136 1,221 1,352 2,060 2,062 2,221 2,481 1,200 1,273 1,200 1,275 1,200 1,275 1,200 1,275 1,200 1,275 1,200 1,275 1,200 1,275 1,200 1,275 1,200 1,275 1,200 1,275 1,200 1,275 1,200 1,275 1,200 1,275 1,200 1,275 1,200 1,275 1,200 1,	1,202 1,006 979 1,068 1,218 1,040 1,208 1,123 1,124 1,089 995 1321334 0,70850 9,362 0,70850 9,362 647 532 742 742 742 742 742 742 742 74	1,232 1,208 1,429 1,646 1,471 1,513 1,570 1,570 1,570 1,272 1,420 1,222 1,420 0,708 0,708 0,708 0,708 0,708 0,708 0,708 0,708 0,708 7,92 4,82 7,92 4,82 7,92 4,82 7,92 4,82 7,92 4,82 7,92 7,92 4,82 7,92 7,92 7,92 7,92 7,92 7,92 7,92 7,9	1,206 1,343 1,322 1,330 1,229 1,330 1,229 1,328 1,228 1,228 1,228 1,228 1,228 1,229 1,	1,374 1,719 1,290 1,296 1,224 2,194 1,435 1,309 1,205 1,309 1,205 1,309 1,205 1,309 1,205 1,309 1,205 1,007 1,205 1,007 1,205 1,007 1,007 1,205 1,007 1,
SUNDIAL COURT SUNDIAL COURT SUNDIAL COURT SUNDIAL COURT SUNDIAL COURT	Sep Oct Nov Dec Jan Feb Mar Apr May Jun Total Total Factor S CO ₂ e	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	103 107 107 107 98 107 98 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 103 107 0.892 0.992 0.99	98 99 99 99 90 99 99 99 99 99 99 99 99 99	90 93 99 93 67 93 90 93 90 93 90 93 90 93 1078 0.70850 0.764 201 2078 200 207850 906 1277 2500 906 336 557 2509 908 336 557 2590 908 336 2507 2597 2597 2597 2597 2597 2597 2597 259	1,136 1,221 1,352 2,660 2,062 2,241 1,842 1,200 1,273 19090,933 19090,933 0,70850 13,526 634 400 954 400 954 634 400 954 6691 0,70850 4,740	1,302 1,006 1,218 1,040 1,223 1,123 1,124 1,040 1,123 1,124 1,039 996 13213.934 0,70850 9,362 9,562 9,	1,222 1,228 1,429 1,427 1,650 1,513 1,504 1,513 1,504 1,212 1,222 1,450 1,222 1,222 1,450 1,222 1,450 1,222 1,450 1,222 1,450 1,222 1,450 1,222 1,450 1,222 1,450	1,206 1,343 1,322 1,330 1,199 1,229 1,398 1,228 1,679 1,501 1,	1,374 1,719 1,290 1,296 1,224 2,194 1,322 1,337 1,309 1,435 1,309 1,435 1,309 1,430 1,309 1,430 1,309 1,400 1,

TOTAL TONNES C02e WATER & WASTE WATER BY ACADE
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	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Water	0.0977	0.0977	0.0977	0.0977	2.6451	4.2896	4.0624	3.8987	10.9620	8.6803	9.7021	9.7540	10.4907
Waste Water	0.0999	0.0999	0.0999	0.0999	5.3449	4.0179	7.0928	6.7506	18.2662	14.3736	16.1149	16.3075	17.4948
GRAND TOTAL	0.1976	0.1976	0.1976	0.1976	7.9900	8.3075	11.1552	10.6492	29.2283	23.0539	25.8170	26.0615	27.9855

Waste and Recycling

		2000 2000	2009-2010	2010 2011	2011 2012	2042 2042	2012 2014	2014 2015	2015 2016	2016 2017	2017 2019
	WASTE RECYCLED (Tonnes)	135.20	140.40	120.24	110.49	134.88	2013-2014	2014-2015	2015-2016	2018-2017	2017-2018
	Coversion Factor	257	257	21	21	21	229.07	203.16	203.16	203.18	203.18
	Tonnes C02e	34,746	36.083	2.525	2.320	2.832	4.811	4.267	4.267	4.345	4.339
	Tonnes Coze	34.740	30.003	2.323	2.320	2.032	4.011	4.207	4.207	4.040	4.555
			Landfill Energy Recovery								
NON-RESIDENTIAL	WASTE SENT TO: (Tonnes)	175.76	228.56	146.41	127.23	133.20	269.41	173.57	173.57	208.07	208.07
	Coversion Factor	290	290	290	21	21	21	21	21	21.3842	21.354
	Tonnes C02e	50.970	66.282	42.459	2.672	2.797	5.658	3.645	3.645	4.449	4.443
	Total Tonnes	310.96	368.96	266.65	237.720	268.080	498.484	376.754	376.754	411.250	411.250
	Total Tonnes C02e	85.717	102.365	44.984	4.992	5.630	10.468	7.912	7.912	8.794	8.782
		000.00	70.00	100.00	105.04			45.00		17.05	17.00
	WASTE RECYCLED (Tonnes)	202.80	70.20	106.92	135.84	68.62	29.60	45.96	39.23	47.65	47.80
	Coversion Factor Tonnes C02e	257	257	21 2.245	21 2.853	21 1.441	21 0.622	21 0.965	21 0.824	21.3842	21.354
	Tonnes Cuze	52.120	18.041	2.245	2.003	1.441	0.022	0.965	0.824	1.019	1.021
	WASTE COMPOSTED (Tonne	s)						2.177	2,177	2,177	2.177
	Conversion Factor	s,						6.000	6.000	10.256	10.204
	Tonnes C02e							0.013	0.013	0.022	0.022
RESIDENTIAL											
			Landfill		Energy Recovery						
	WASTE SENT TO: (Tonnes)	175.76	228.56	231.66	141.07	116.55	127.78	108.89	104.63	40.24	43.00
	Coversion Factor	290	290	290	21	21	21	21	21	21.3842	21.354
	Tonnes C02e	50.970	66.282	67.181	2.962	2.448	2.683	2.287	2.197	0.861	0.918
			-			1	1		1	1	1
	Total Tonnes	378.56	298.76	338.58	276.910	185.170	157.376	157.024	146.033	90.067	92.977
	Total Tonnes C02e	103.090	84.324	69.427	5.815	3.889	3.305	3.265	3.034	1.902	1.961
Total Tara	es Waste All Souces										
	cled / Composting	338.00	210.60	227.16	246.33	203.50	258.67	251.32	244.59	253.01	253.16
	I/Energy Recovery	351.52	457.12	378.07	268.30	203.50	397.19	282.46	278.20	253.01	253.10
	D TOTAL TONNES	689.52	667.72	605.23	514.63	453.25	655.86	533.78	522.79	501.32	504.23
-	cled as % of total Waste	49.02%	31.54%	37.53%	47.87%	44.90%	39.44%	47.08%	46.78%	50.47%	50.21%
		1									
	NES C02E ALL WASTE LED / Composting	103.090	84.324	44.704	5.524	4.238	6.279	4.623	4.482	5.491	5.486
	EED / Composing	103.090	132.565	109.640	5.634	5.245	8.341	5.932	5.842	5.310	5.361
	ND TOTAL C02e	205.031	216.889	154.345	11.159	9.483	14.620	10.555	10.324	10.800	10.847
	cled as % of total C02e	50.28%	38.88%	28.96%	49.51%	9.483 44.69%	42.95%	43.80%	43.41%	50.84%	50.57%
ionnesiecy		30.20 /0	30.00 /0	20.90 /0	-0.01/0	- - .09/0	-2.90/0	-0.00 /0	-	00.04 /0	30.37 /0

Assessment against baseline and targets – scope 3

Transport

- 75. The data in the previous section show that the Guildhall School's total indirect greenhouse gas emissions (scope 3) in academic year 2014 arising from student transport activity amounted to 990.812 tonnes. When adding staff commuter travel and staff and student business travel from the 2014 survey, a grand total of **1751.819 tonnes** is reached for total emissions arising from travel. This is an increase on previous years.
- 76. Due to the School's location at the heart of the City of London, the data show that the vast majority of travel to and from the School, both by staff and students, is by public transport, cycling or walking. Less than 1% of travel is by car or taxi, and the School has no car-parking facilities of its own.
- 77. The data also show that 57% of the above greenhouse gas emissions are generated as a result of students travelling to and from their home addresses at the beginning and end of term. Given that more than a third of the School's students are currently from outside the UK, representing over 40 nationalities, this is not a surprising statistic.
- 78. Consequently it is not considered feasible to expect a large reduction in greenhouse gas emissions from travel to be achievable.
- 79. The School nonetheless set a modest target for the reduction of total scope 3 indirect greenhouse gas emissions arising from transport of 8% by the academic year 2019/20 against the 2010 baseline.
- 80. The School will seek to achieve this reduction by continuing to expand the availability of cycle bays to encourage staff and students to cycle to the School. It will also continue to ensure that the School's facilities are available for use by students throughout the year, for the benefit of students wishing to remain in London during the vacations. Currently the School is closed only on Christmas Day, Boxing Day and during the Easter weekend.
- 81. It should be noted that the data shown above for staff and student business travel include the emissions associated with a limited number of staff flying to New York and elsewhere in order to conduct auditions for students applying for places at the Guildhall School. If these trips did not take place, a considerably larger number of students would need to fly in the opposite direction to be auditioned in London.

Water and waste

82. The data in the previous section show that the Guildhall School's total indirect greenhouse gas emissions (scope 3) in academic year 2017/18 arising from water, waste water and waste amounted to 38.833 Tonnes. With 10.847 tonnes from waste and 27.986 from water and waste water. This reduction is a direct result of the City of London now sending its non-recyclable waste for incineration

at an energy recovery plant in South-East London.

- 83. The Guildhall School has taken significant steps to reduce its water consumption by installing percussion taps in the majority of its estate and water saving shower devices in student accommodation. The School has just one hall of residence providing accommodation for 177 students.
- 84. Consequently it is not considered feasible to expect a large reduction in greenhouse gas emissions from water consumption to be achievable. The School has invested in water meters for the Guildhall School and from 2013 is collating water consumption data for Milton Court which has to date been estimated although we are now collecting meter readings from 2008.
- 85. In 2010/11 the School set a target for the reduction of total scope 3 indirect greenhouse gas emissions arising from water, waste water and waste of **30%** by the academic year 2019/20 against the above 2010 baseline. This was an absolute target, meaning that total indirect greenhouse gas emissions arising from water, waste water and waste must not exceed 97.697 tonnes in 2019/20. Given that this target has been been exceeded and in light of more and increasingly accurate data that is currently being collected we have revised the targets to:
 - Water 15% reduction by 2019/20 against a 2013/14 baseline with emissions not exceeding 24.843 Tonnes
 - Waste 90% reduction by 2019/20 against a 2010/11 baseline meaning emissions should not exceed 15.434 Tonnes

Implementation plan – scopes 1 and 2

- 86. In order to achieve its 2020 carbon reduction target for scope 1 and 2 emissions, the School has identified a number of initiatives and interventions that will reduce its energy consumption. Many of these are behavioural adjustments that attract little or no cost, a lot of which are already being implemented. Others are engineering or technical interventions that reduce the amount of energy needed to operate the School's buildings. Whilst these initiatives have a capital cost attached to them, they will of course generate future savings in energy costs and will provide a good return on investment particularly as energy costs inevitably rise. Apart from the possibility of introducing additional secondary glazing which needs detailed evaluation, the most expensive project is to install a voltage optimisation unit in the Silk Street building, but this is also expected to produce the greatest energy savings estimated at 8%. It is anticipated that the majority of the funding for the engineering and technical interventions will be found from the School's annual ring fenced strategic capital programme'.
- 87. The following tables list the initiatives and projects that will be or are already being implemented, or are the subject of detailed evaluation to establish their viability.

Behavioural and awareness-raising solutions

Initiative	Detail	Action by	Timescale/ progress
Switch off electrical equipment	Staff and students are encouraged to turn off all electrical equipment, monitors, lights, printers, copier machines when at meetings, lunch and at the end of the day. Room- by-room data have been collected since September 2009 identifying how many appliances are left switched on at night and an analysis of these data are published on the School's intranet to remind staff how well they are doing. An energy saving competition has also taken place.	SSG and Facilities department	Ongoing
Screen saver and/or desktop message to turn off monitors	This is a simple and effective reminder that switching off an unattended monitor saves more energy than leaving it on stand-by.	IT department	Ongoing
Encourage staff and students to turn the heating down or off if not needed, rather than opening windows	This is a particular problem in Sundial Court bedrooms, where windows are often used as the temperature control mechanism, rather than the thermostatically- controlled radiator valves. Awareness raising comprises notices in the Sundial Court handbook, as well as reminders at residential meetings.	Student Affairs and Facilities departments	Ongoing
Departmental environmental accreditation	This initiative involves the creation of a simple internal accreditation scheme, whereby the School's departments work towards a set of environmental and sustainability standards, thus creating a competitive approach to achieving a more sustainable institution.	SSG	Spring term 2014
Sundial residents' meetings	These regular meetings are used to promote sustainability and environmental awareness and to encourage students to engage with the issues and contribute ideas.	Student Affairs and Facilities departments	Ongoing
Use of foyer screens to show	The School has a number of large display screens in its main foyer, showing a variety of information	SSG and IT department	Ongoing

Initiative	Detail	Action by	Timescale/ progress
sustainability messages	such as forthcoming events and room bookings and usage for the day. The screens are programmed to show sustainability messages, either at times when their primary use is not necessary or interspersed with their primary use.		
Environmental Awareness Days	The School organises regular events in the main foyer, usually on a termly basis, at which environmental films are shown, and energy-saving ideas and statistics are promoted, often in conjunction with external initiatives.	SSG	Ongoing
Incorporating sustainability issues into the recruitment and appraisal process	A commitment to working towards a more sustainable and environmentally friendly institution should be part of the job description of every staff member. Awareness of the initiatives in which the School is engaged should form part of the induction process. For certain management roles, particularly in Engineering and in Technical Theatre, specific environmental objectives are already being included in the appraisal process.	HR department	Implemented for Engineering, and Facilities staff in July 2013

Engineering and technical interventions

Initiative	Detail	Est. Cost £	Timescale/ progress
Installation of 'power perfector' unit	This is a voltage reduction and stabilisation unit that sits in-between the main incoming electrical supply and the distribution board. It monitors the incoming supply voltage and reduces it to the EU standard of 220V, making a saving of 8%. This system has already installed in Sundial Court, and in the Silk Street building.	60,000	Completed
Installation of new Building Energy Management System (BEMS)	The BEMS is a computer-controlled system that manages the building heating, cooling, hot water and ventilation systems. New systems were installed in 2009 both in the Silk Street building and in Sundial Court, which allows us to monitor/manage all of the systems and optimise them for best energy usage.		Completed. Further refinement of the settings is ongoing with BEMS survey undertaken in 2018
Reduce run hours on heating circuits and ventilation systems	The run hours of the heating and ventilation systems in the Silk Street building and in Sundial Court have been reviewed in consultation with student union representatives, facilities and other relevant staff, enabling the School to use the BEMS to operate the heating circuits and ventilation systems more precisely to the times that suit operational requirements.		Ongoing
Introduction of low energy and LED lamps	A number of different trial lamps have been introduced, including replacing the old style lamps with the LED equivalent where possible. The resultant data have now been reviewed and a large scale replacement programme is to be implemented, with an expected energy saving of 8%. The development of low energy and LED lighting for theatre productions is being investigated for possible introduction in the future as the technology improves.	15,000	Completed

Initiative	Detail	Est. Cost £	Timescale/ progress
Installation of Chlorine Dioxide unit to reduce calorifier temperatures	The primary function of a Chlorine Dioxide unit is to control legionella bacteria. It constantly doses the water with chlorine dioxide, which is an oxidizing biocide that reacts with a wide range of organic substances and is effective against legionella bacteria. As a result of using this unit, the temperature of the hot water systems is able to be safely reduced thus saving energy in heating the water.		Completed autumn term 2010
Installation of variable speed drive pumps	The installation of these units reduces the pressure on the pumps and valves as the water flows around the systems. By using the BEMS to control them, the electricity used to drive the pumps is reduced.	9,000	Completed in Summer term 2013
Review of STARK meter overnight loads to reduce energy usage	STARK is the electricity monitoring system used by the distribution company, which produces half-hourly data. A review of these data enables the School to identify what is being left on overnight, and to reduce the static load units that are permanently switched on and make them switchable so they can be turned off when not required.		Ongoing
Removal of constant load transformers in engineering areas	A review of these units in the plant rooms and service risers revealed that they are not all required. Some units have been removed and the others have been put on isolation switches to allow them to be turned off.	1,000	Summer term 2013
Review and testing of movement sensors on lighting and air- conditioning	Installation of movement sensors enables local lighting and air- conditioning to be turned on only when the room is in use. This will need extensive testing due to the specialist uses to which many areas of the School are put. They will then be installed in all areas where it is practical.	4,000	Summer term 2013
Review HVAC system for use of "free cooling" to	The BEMS allows the School to review inside and outside temperatures, to enable the run times of the chiller and CHP cooling		Ongoing

Initiative	Detail	Est. Cost £	Timescale/ progress
reduce chiller run times	systems to be balanced by using cool air from outside.		
Auto-shut down of IT equipment	Ensuring that staff and students switch off IT and other appliances that are their sole responsibility is a behavioural challenge, but equipment that is monitored centrally from the IT network can be automatically shut down when the School closes each night. This ensures that no energy is wasted by appliances being left on unnecessarily.		Ongoing
Investigate increased use of secondary glazing	This is problematic due to the estate's grade 2 listing, but may be possible in some areas. Project requires detailed evaluation.	800,000	Being evaluated
CAFM system	Introduction of Computer Aided Facilities Management (CAFM) system to ensure planned preventative maintenance programmes are in place.		Complete
Variable speed drive pumps	To reduce the pressure on the pumps and valves as the water flows around the systems. With the use of the Building Energy Management System (BEMS) to control them, the electricity used to drive the pumps is reduced	40,000	Complete
Space planning	Examine utilisation of School buildings to ensure effective space management and ensure energy efficiency		In Progress

Implementation plan – scope 3

88. Although the Guildhall School does not anticipate being able to achieve substantial reductions in its scope 3 emissions because of its size and location, various initiatives have nonetheless been put in place, or are being evaluated, to reduce them as much as possible, as shown in the following table. Despite baseline data for emissions arising from procurement not yet being available, possible initiatives to reduce such emissions are already included in this plan.

Initiative	Detail	Action by	Timescale/ progress
Rainwater diverting	Diverted (grey) water can be re-used for plant watering and WCs	Engineering department	Grey water is being used for plant watering
Roll out of percussion taps	Percussion taps switch off automatically, thus saving water	Engineering department	Completed
Installation of water saving shower units	Sundial Court Student accommodation	Engineering department	Completed
Install additional water meters	Whilst water consumption in Sundial Court is accurately measured, usage in the main Silk Street building is not. Water meters in this building will enable accurate data to be compiled.	Engineering department	Completed
Reduce use of plastic	Encourage offices to use mugs/glasses rather than disposable plastic cups	SSG	Ongoing
Encourage paper-free working	Work towards greater use of electronic communication	SSG	Ongoing
Reduce paper usage	Print double-sided (all printers default to double-sided), reduce margin sizes, reuse scrap for notepaper, recycle envelopes	SSG	Ongoing
Increase recycling	Increase number of recycling points and consider other	SSG and Facilities	Ongoing

Initiative	Detail	Action by	Timescale/ progress
	materials that can be recycled	department	
Reduce waste going to skips	Review ways of reducing the amount from theatre sets that are thrown away after each production	Technical Theatre	Ongoing
Encourage cycling	Promote cycle safety and training schemes and increase cycle bays to support staff and students who wish to cycle to the School. Promote the cycle loan scheme	SSG	Ongoing
Procurement policy	Continue to consider locality of suppliers and agencies according to City of London procurement guidelines	All departments – monitored by SSG	Ongoing
Procurement policy	Continue to buy Fairtrade tea/coffee/cups and other produce	Facilities department	Ongoing
Procurement policy	Consider the 'green credentials' of suppliers, e.g. accredited to ISO 14001, before awarding contracts and placing orders	All departments – monitored by SSG	Being evaluated

Governance and progress monitoring

Governors

89. The Committee of University Chairs' 'Guide for Members of Higher Education Governing Bodies in the UK' states that: 'The governing body is responsible for oversight of the strategic management of the institution's land and buildings with the aim of providing an environment that will facilitate high-quality teaching and learning and research.' Carbon management is a key strategic issue, so it is a crucial area for governors who should be informed and involved in decisionmaking on the institution's approach to reducing its emissions. This is why OfS (formerly HEFCE) asks for carbon reduction plans to be signed off by the governing body.

Officers

- 90. At officer level, the School's Senior Management Team has ultimate responsibility for taking ownership and for communication of this strategy, and for ensuring that its action plan is implemented and progress monitored accordingly. The Senior Management Team will ensure that a monitoring report is submitted to the Board of Governors annually.
- 91. At an operational level, the Operations Board will have a role as the committee into which the SSG reports, particularly in respect of monitoring. It will receive progress reports on monitoring by receipt of the minutes of SSG meetings.
- 92. Detailed monitoring of this strategy will be carried out by the SSG at each of its meetings, which are twice termly. It will also be responsible for revising the strategy in the light of progress.

Jonathan Poyner (The Director of Operations and Buildings) - Chairman

Student Representatives (up to four)

Supplemented by colleagues from the City of London Corporation and other external experts as required.