

CLIMATE ACTION PLAN PHASE 1

NET ZERO

BY 2030

**CLIMATE
ACTION
PLAN**

FOREWORD

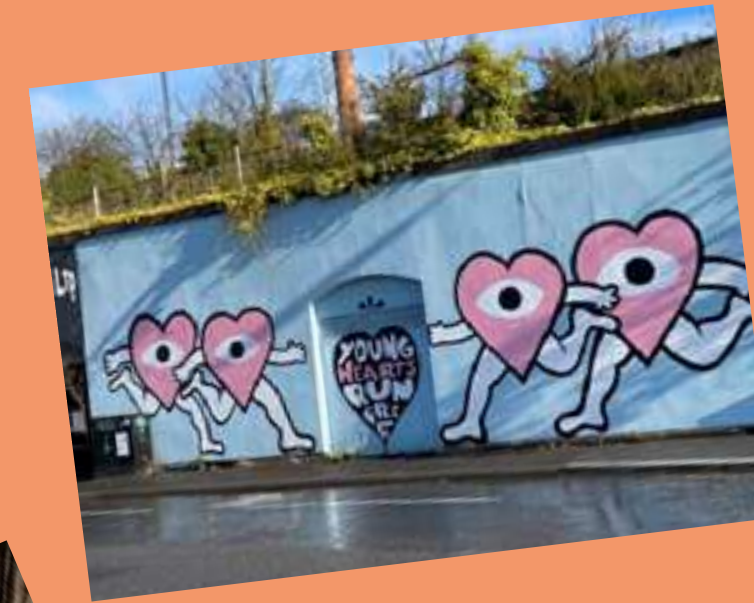
In November 2019, following on from our institutional declaration of the climate emergency earlier that year, Newcastle University held a Climate Conversation. The event was a brilliant climax to a week focused on global social, racial and environmental justice, at the centre of which was the opening of our Frederick Douglass Centre – our first purpose-built Learning and Teaching Centre – by Kenneth Morris Jr, a direct descendant of the abolitionist and campaigner who had resided in Newcastle for a short time.

The Climate Conversation was itself a co-production between our students, academics, professional services colleagues and external partners and friends. Through a series of structured discussions punctuated by stimulus talks we developed ideas for the roadmap to net zero and a decarbonised future. We followed up that thinking with other talks, meetings, workshops and student summits to shape the Climate Action Plan that you have here. It is informed at every turn by our core research and educational strengths, and will ensure that the way we live, work and develop our campus is shaped at every turn by our commitment to environmental sustainability.

In April 2021, following careful discussion and re-examination of fast-changing contexts and in recognition of the need to act with pace and commitment, both University Council and Executive Board decided that the University's ambitions to achieve net zero should be brought forward from 2040 to 2030. We think this acknowledges the seriousness and scale of the need for action now.

We recognise the urgency of the challenge. This is our roadmap to change. It won't be easy – but please join us on the journey.

Professor Julie Sanders
Deputy Vice-Chancellor and Provost



‘I PLACE MY FEET WITH CARE IN SUCH A WORLD’

WILLIAM STAFFORD

All photos above were taken by Julie on her walk to work.

GLOSSARY OF TERMS

AIFs	Alternative Investment Funds	HESA	Higher Education Statistics Agency
BEIS	UK Government Department for Business, Energy & Industrial Strategy	IPCC	InterGovernmental Panel on Climate Change
BMS	Building Management System	kWh	Kilowatt hour
CAV	Campus for Ageing and Vitality	LCA	Life-cycle analysis
CCC	UK's independent Committee on Climate Change	LED	Light-emitting diode
CCUS	Carbon Capture Utilisation and Storage	LPG	Liquid Petroleum Gas
CE	Circular Economy	NCC	Newcastle City Council
CF	Carbon factor	NETs	Negative emissions technologies
EAUC	Environmental Association for Universities and Colleges	NZTF	Net Zero Taskforce
EfW	Energy from Waste	PS	Newcastle University Professional Services
EMR	Estate Management Record	PV	Photovoltaic
EMS	Environmental Management System	PV-T	Photovoltaic-Thermal
EnMS	Energy Management System	RDF	Refuse-derived fuel
ESC	Environment and Sustainability Committee	REGO	Renewable Energy Guarantees of Origin
ESG	Environmental, social and governance	RIBA	Royal Institute of British Architects
FMS	Newcastle University Faculty of Medical Sciences	SAGe	Newcastle University Faculty of Science, Agriculture and Engineering
FTE	Full-time equivalent	SDGs	UN Sustainable Development Goals
GIA	Gross internal area	SPR	Space and Project Request
HaSS	Newcastle University Faculty of Humanities and Social Sciences	SRIP	Socially Responsible Investment Policy
HE	Higher Education	tCO₂e	Tonnes of carbon dioxide equivalents
		TEC	The Energy Consortium
		UEB	Newcastle University Executive Board
		UNFCCC	United Nations Framework Convention on Climate Change



INTRODUCTION THE CLIMATE CRISIS

Climate change, now recognised by the UN as the 'climate crisis', has reached a tipping point.¹ We are already witnessing disastrous climate-related events both nationally and internationally, the impacts of which are often being felt unevenly and most severely by vulnerable and underrepresented people. Rising global temperatures, melting of ice caps and an increase in the frequency of extreme weather events are all having visible and serious impacts on populations and the environment both in the UK and internationally.

In December 2015, 'The Paris Agreement' was ratified at the United Nations Framework Convention on Climate Change (UNFCCC) COP 21 summit, committing all member states to put forward their best efforts to maintain global temperature warming below two degrees Celsius (2°C) above pre-industrial levels by the close of this century in 2100. In addition, the agreement also sought to pursue efforts to reduce warming below this threshold to 1.5°C. The Intergovernmental Panel on Climate Change (IPCC) was invited to produce a special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.²

The IPCC released their report in 2018, finding that whilst halting warming below a 1.5°C rise is possible, it would require, 'unprecedented transitions in all aspects of society', particularly given that human activity is estimated to have already generated a global temperature increase of 1°C.³ It also highlights that impacts resulting from sea level rise, drought and flooding will not be felt equally, and the level of risk posed by these threats depends on vulnerability factors, including level of socio-economic development, political stability, geographical location, and the ability to mitigate and adapt.

This is reflected in the wider public response and the calls for immediate action, with the emergence of activist groups including 'Extinction Rebellion' and the international 'School Strike for Climate' or 'Fridays for Future' movement as founded and championed by Greta Thunberg. Now the COVID-19 pandemic, a not dissimilar existential crisis, further demonstrates that societal globalisation has reached a threshold where scarcely is a problem faced in isolation, and that collective action is imperative. Both these threats also present significant, intergenerational injustices, where the younger members of our societies will likely experience a vastly changed and challenging future. As a prominent Higher Education Institution, it is our duty and responsibility to prepare our students as best we can for that changed future.



AIM OF THIS PLAN

At Newcastle University, we recognise the threat that the climate crisis poses and that we must play our part in addressing this. Echoing the pledges made within the Paris Agreement, this Climate Action Plan seeks to provide detail and clarity on the following:

- The current national and regional landscape in the context of the climate crisis, and the key efforts being made at both levels;
- Newcastle University's place within this context, our climate action background, carbon accounting methodologies and performance to date; and
- Newcastle University's framework in addressing the climate crisis going forwards; including our targets and action plans, and our projected performance against these.

Through the communication of this plan, we also wish to educate and engage with all audiences on the climate crisis and how we can affect the change needed.

This plan also aims to reinforce the University's commitments to the UN Sustainable Development Goals (SDGs) and to social and environmental justice by aligning our climate action work across this agenda. The action plans documented within this report will contribute to the delivery of SDGs including:



This document is the first in what will continue to be an annual reporting mechanism against a pre-determined number of reporting 'phases', in line with our newly developed carbon budgeting and action plan structure as defined later in the 'Net Zero' section of this roadmap.

It is our hope that through this plan and future communications we will engage with people across all audiences on the vital importance of this agenda,⁴ not just internally here at Newcastle University but globally, to share knowledge, best practice and experiences in the fight against the climate crisis.

FIGURE 1 Newcastle University Climate Action Plan – relevant UN Sustainable Development Goals.



BACKGROUND

UK

In 2008, the UK was the first country in the world to set a legally binding carbon reduction target. The Climate Change Act 2008 set a target of an 80% reduction in UK emissions by 2050 against a 1990 baseline.⁵ In June 2019, the Climate Change Act was amended to increase the target reduction to 100% i.e. effectively legislating for 'net-zero' carbon emissions by 2050. This target had been recommended by the UK's independent advisory body, the Committee on Climate Change (CCC)⁶ in its report 'Net Zero – The UK's contribution to stopping global warming.'⁷ Most recently, in April 2021, the Government announced that it would legislate for the sixth carbon budget as recommended by the CCC, and set a target to achieve a 78% reduction in greenhouse gas emissions by 2035. The Government has also announced a 68% reduction by 2030 as a Nationally Determined Contribution (NDC) under the Paris Agreement.

In the context of this emissions target, net zero does not mean an absolute reduction to zero, but any greenhouse gas emissions that continue to be produced by this date will either be captured and removed from the atmosphere, or potentially offset. This can be achieved through nature-based solutions such as tree planting and peatland restoration, and/or Negative Emissions Technologies (NETs) such as Carbon Capture Utilisation Storage (CCUS). The CCC report is clear that both types of solutions will be required in order to deliver net zero.

The UK Government has established a series of five-yearly carbon budgets (Carbon Budgets Order 2009) with a 'limit' on the volume of emissions that can be produced within the budget period. To date, budget limits have been formally announced until the end of 2037, with further allowances and budget periods yet to be confirmed.^{8,9,10}

TABLE 1 UK Government carbon budgets, targets, and performance

Budget number (budget period)	Target emissions level within budget period (MtCO ₂ e)	% reduction against 1990 baseline year	Target met (emissions level, MtCO ₂ e)
First (2008-2012)	3,018	25%	Yes (2,954)
Second (2013-2017)	2,782	31%	Yes (2,503)
Third (2018-2022)	2,544	37%	TBC
Fourth (2023-2027)	1,950	51%	TBC
Fifth (2028-2032)	1,725	57%	TBC
Sixth (2033-2037)	965	78%	TBC

In order to achieve its aims as detailed within the Climate Change Act 2008, and those within the 2015 Paris Agreement, the UK Government Department for Business, Energy and Industrial Strategy (BEIS) published 'The Clean Growth Strategy' in line with its overarching Industrial Strategy.¹¹ This document sets out the Government's plan to meet its fourth and fifth carbon budgets and describes proposals to decarbonise across its highest contributing sectors: business and industry, domestic energy efficiency and low-carbon technology, transport, power infrastructure, and agriculture, amongst others.

The ability for all UK regions, cities, organisations and individuals to meet their carbon emissions targets will be influenced to varying degrees by the UK Government's support for, and performance against the UK net zero target. This includes the city of Newcastle upon Tyne and ourselves at Newcastle University. Future changes in policy, benefits and incentives, taxation, and investment in the research, development and installation of ultra-low/zero-carbon technologies will all play a crucial role. It is also true that cultural and behavioural change will be a key part of achieving a just transition - the role of individuals in achieving net zero cannot be underestimated.

Following the announcement of the UK Government's net-zero carbon target there has been a nationwide uptake of similar commitments, with differing target dates and ambitions, across both the public and private sector including local authorities and the Higher Education (HE) sector.

NEWCASTLE UPON TYNE

Newcastle upon Tyne, nestled on the north bank of the River Tyne, is the largest populated city in the North East of England and is steeped in a rich industrial history stretching as far back as the Romans and Hadrian's Wall. As the birthplace of the railways and a stronghold of British mining and shipbuilding, Newcastle was and continues to be a powerhouse in engineering.

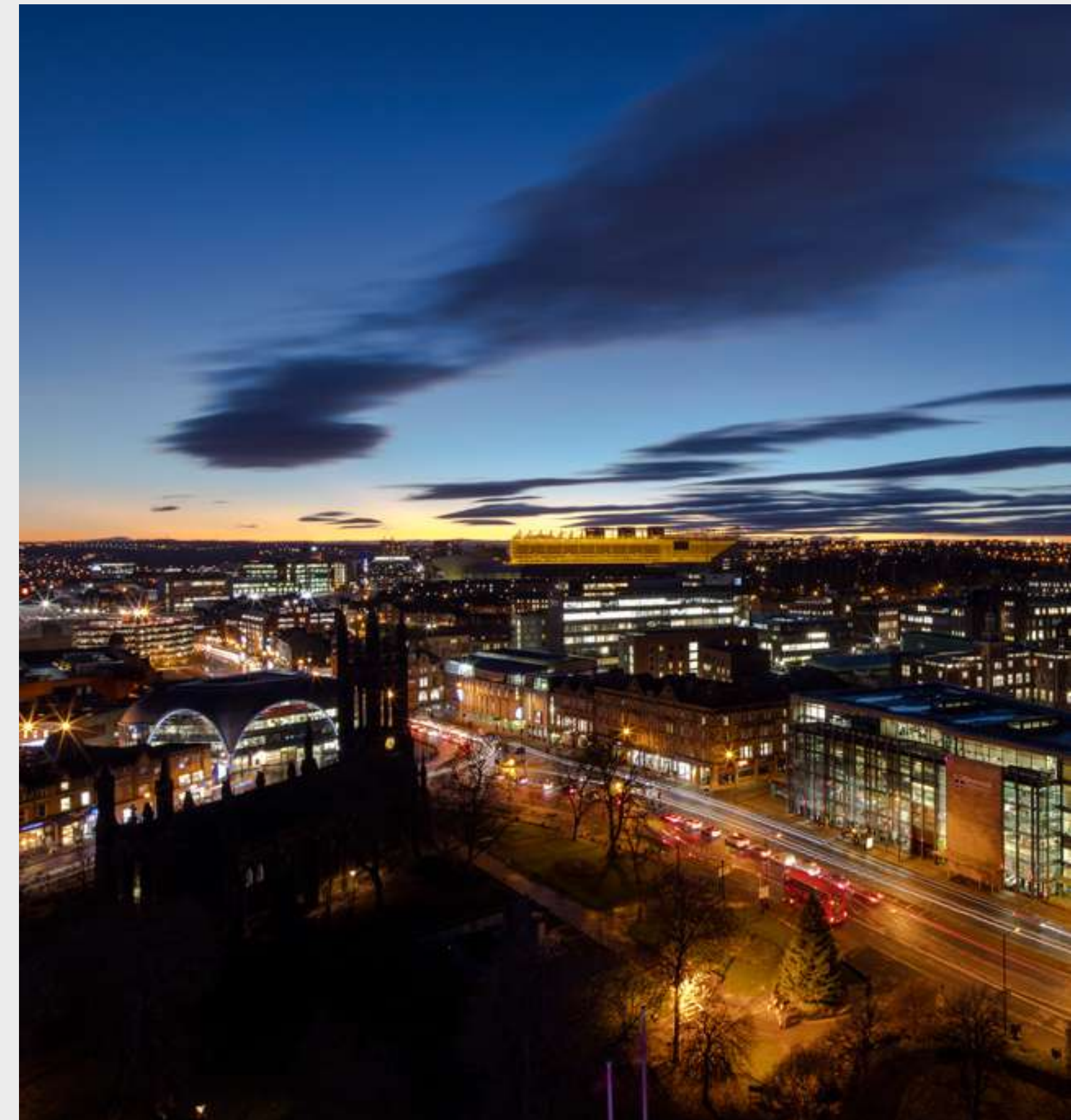
Newcastle is also a place that has demonstrated regeneration as illustrated by the city's development since the 1960s following the decline of the industries upon which it was built. This regenerative ability looks to have been maintained as the city aims to become a frontrunner in the fight against the climate crisis, winning 'Smart City of the Year 2019' at the Digital Leaders 100 awards for its collaborative and innovative use of technology across the city.¹² The Newcastle Helix development, specifically the National Innovation Centre for Data and the Urban Observatory, being the stand-out features.

Newcastle City Council (NCC) declared a climate emergency in 2019 and announced a net-zero carbon target of 2030, with a call for evidence that closed 31st January 2020.¹³ As a means of governance, Newcastle City Council established its Climate Change Committee to collate recommendations and evidence from climate scientists and climate change experts to inform the city on how to tackle the climate crisis. NCC also established a Net Zero Taskforce (NZTF) co-chaired by the Leader of Newcastle City Council, Cllr Nick Forbes, and Newcastle University Professor of Climate Change Impacts, Hayley Fowler – this group governs and oversees the city-wide climate action plan and unites key city stakeholders with the aim of meeting the city's net zero target.

NCC have set a target of net-zero carbon emissions by 2030; their climate action work and Net Zero Action Plan can also be classified into three streams: domestic, non-domestic, and transport, with the University contributing to all three.¹⁴

A key outcome from the workings of the Climate Change Committee to date was the Tyndall Centre's report on establishing climate commitments for Newcastle in line with the UN Paris agreement.¹⁵ The report, which was put forward to NCC on 19 September 2019, states that, to meet the requirements of the Paris agreement, a 12.8% reduction in carbon emissions per annum is needed, with the emphasis placed on the importance of early action.¹⁶ This report is referred to later in this plan, and is used to guide the University in its own interim target and carbon budget setting.

At Newcastle University, we recognise that the climate crisis must be addressed communally; we cannot achieve our carbon reduction ambitions without working alongside our local and regional partners, and vice versa. In November 2020 Newcastle upon Tyne was recognised as a global 'climate leader' by the international climate research provider CDP, becoming only one of four places in the UK to receive the top 'A' grade, and one of only 88 globally.¹⁷ As we ramp up our collective ambition to achieve net zero by 2030 we must build on these foundations and work together to take the further steps which will be necessary to deliver net zero – the University is uniquely placed to contribute through its core strategies including research and education, and also through joining up operational plans for carbon reduction.



**WE HAVE ACHIEVED
OUR TARGET OF A**

43%

REDUCTION IN CARBON

EMISSIONS BY 2020

AGAINST A 2005–06 BASELINE

CONTEXT

Here within the heart of Newcastle upon Tyne, we at Newcastle University pride ourselves on our close integration within all aspects of life in the North East economically, culturally, and socially. We are home to more than 28,000 students and 6,000 colleagues, with a recognised pedigree in teaching and research. We also aspire to further increase our global presence and expand on our existing partnerships to aid us in making a positive impact and become visibly leading, not only within Newcastle but across the world.

Newcastle University is a large economic provider both locally and regionally; an independent study published in February 2017 (utilising 2014-15 data) found that the University provided for 6% of all jobs within Newcastle, and added £1.1 billion to the local economy.¹⁸ With further increases in colleague and student numbers (including international students) since 2014-15, this contribution is likely to be greater in the present day.

With this context comes significant responsibility, and we are acutely aware of both our socio-economic role within the city as well as our impact on the local environment. As one of the largest public sector contributors within Newcastle city's reported carbon emissions, we are working extremely closely with Newcastle City Council and other local/regional stakeholders to aid the city in the achievement of its net zero carbon target. We also maintain a strong presence on the city's NZTF including the other working groups established under the taskforce.

As an institution, we have driven continual improvement across each aspect of our operations for over a decade, and currently hold both the ISO 14001 and ISO 50001 standards for our Environmental Management System (EMS) and Energy Management System (EnMS) respectively. We have continuously developed our, now mature, management systems over the course of the last eight years, overseen by our in-house Newcastle University Sustainability Team, and audited annually by an external verification body. Our commitments and objectives towards further improvements are outlined within our environmental sustainability and energy policies, both of which are available to read [here](#).



A TIMELINE OF SOME OF OUR SIGNIFICANT CLIMATE ACTION EFFORTS TO DATE CAN BE SEEN BELOW:

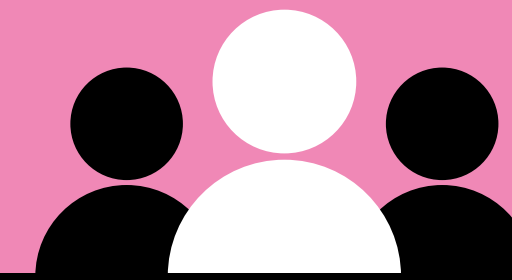
- 2007** First Carbon Management Plan published
- 2007** Establishment of the University's Environment and Sustainability Committee (ESC)
- 2008** Inaugural Newcastle University Celebrating Success: Environment Awards event.
- 2008** Opened our Salix recycling fund for energy efficiency and carbon reduction projects
- 2009** Environmental Sustainability Policy established and formation of the Newcastle University Sustainability Team
- 2012** People and Planet University League 'First' ranking
- 2012** EcoCampus 'Platinum' Award and ISO 14001 Environmental Management System certification achieved
- 2013** First audit on sustainability in the curriculum completed across the university
- 2014** Partnered with Go Smarter to Work to deliver sustainable travel incentives eg Dr Bike
- 2015** Energy policy established
- 2015** ISO 50001 Energy Management System certification
- 2015** Carbon Advisory Report produced including investment commitment
- 2016** Highest ranking Russell Group university in the People & Planet Sustainability League.
- 2017** On-site with our £2.4m campus LED retrofit scheme
- 2017** Opening of our award-winning Urban Sciences Building
- 2018** Signed up to BEIS HE Carbon Pledge
- 2019** Declared a Climate Emergency and Net Zero by 2040 carbon target
- 2019** Ventured into TEC Power Purchase Agreement to purchase Blyth wind-generated electricity
- 2019** Launch of colleagues engagement programme, Action 2020
- 2019** Hosted our Climate Conversation event
- 2019** Became member of Newcastle City Council's Net Zero Taskforce
- 2020** Carbon Trust Scope 3 emissions assessment and report
- 2020** Opening of The Catalyst, our first BREEAM 'Outstanding' Building
- 2020** Achieved divestment from fossil fuels within endowment funds held in equities.
- 2020** Newcastle University Sustainable Framework for Construction published
- 2021** Brought forward our net zero target to 2030

We recognise the urgency associated with climate change, as well as the inequitable impacts this has on the natural world and human societies across the globe. This is why on the 10th April 2019, we declared a climate emergency, and announced our initial target of net-zero carbon dioxide emissions by 31st July 2040.

Underpinned by our certified management systems, and governed by Newcastle University's Environment and Sustainability Committee (ESC) chaired by Deputy Vice-Chancellor and Provost, Professor Julie Sanders, we are steadfast in our response to the Climate Emergency and shall communicate our performance and actions across this agenda within this and future iterations of this report.



TIMELINE



1

2007

- First Carbon Management Plan published
- Establishment of the University's Environment and Sustainability Committee (ESC)



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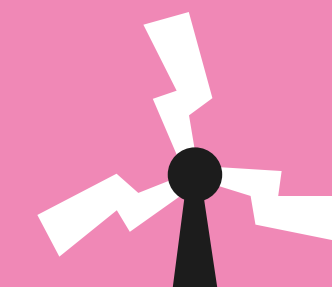
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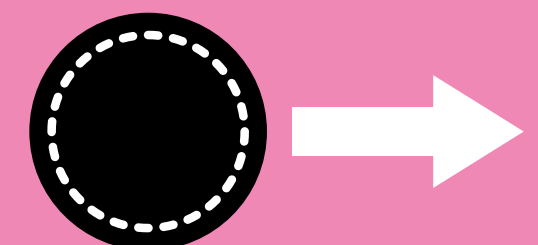
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2021

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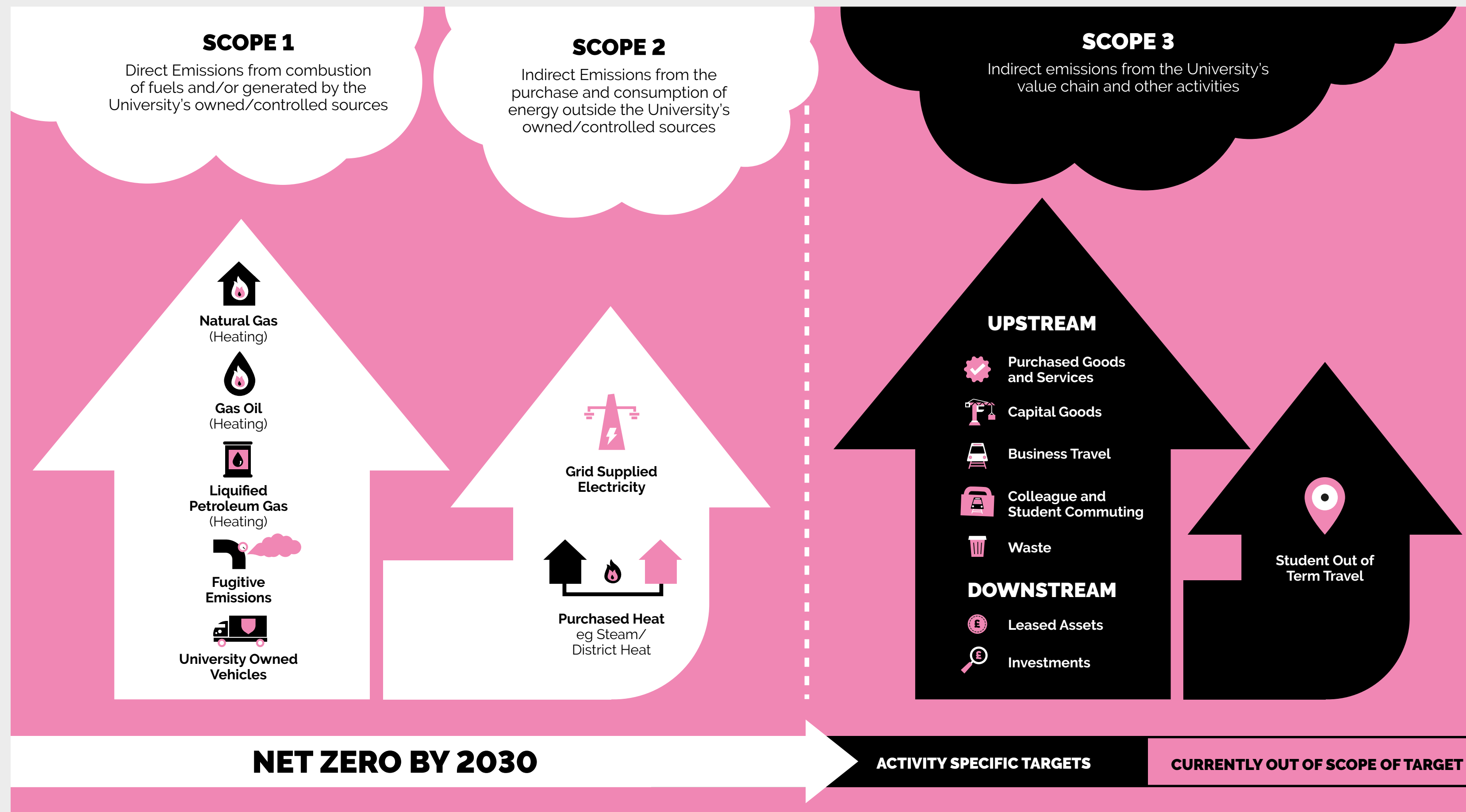
ACCOUNTING FOR OUR CARBON EMISSIONS

Prior to the creation of this new Climate Action Plan, since 2008, we have systematically reported on our emissions via the University's 'Carbon Management Plan' document. The University also returns annual carbon dioxide emission figures for all 'scopes' to the Higher Education Statistics Agency (HESA) within our yearly 'Estate Management Record' (EMR) submission.

Historically we have accounted for our emissions within the three categories (or 'scopes') as defined by the Greenhouse Gas Protocol (GHG Protocol), the world's most recognised carbon accounting tool. This standard of reporting is utilised globally across all sectors including the HE sector.

Note that within this document the terms 'emissions' and 'carbon emissions' refer to carbon dioxide equivalents, measured in tonnes (tCO₂e).

FIGURE 1 Newcastle University scope 1, 2 and 3 emissions sources



There are three classes of emission scopes and they can be defined as follows:

Scope 1 – direct emissions that arise from the combustion of fuels and/or energy generated by the organisation's owned or controlled sources.

Newcastle University's relevant emission sources within this scope include:

- Natural Gas (Heating);
- Gas Oil (Heating);
- Burning Oil (Heating);
- Liquefied Petroleum Gas (LPG) (Heating);
- Petrol and Diesel (University-owned, 'Fleet' vehicles); and
- Fugitive Emissions (fluorinated gases, typically found in air conditioning, cooling, and refrigeration systems).

Scope 2 – indirect emissions that arise from the purchasing and consumption of energy generated outside of the reporting organisation's owned or controlled sources.

Newcastle University's relevant emission sources within this scope include:

- Grid-Supplied Electricity (power, and electrical heating where applicable); and
- Purchased Heat, including for us steam at our Medical School, and district heat at Newcastle Helix.

Scope 3 – indirect emissions that arise within an organisation's value chain and other activities, typically out of the organisation's immediate control.

Newcastle University's relevant emission sources within this scope include the following, in line with the Greenhouse Gas Protocol - Corporate Value Chain (Scope 3) Accounting and Reporting Standard:²⁰

- Upstream
 - Purchased Goods and Services
 - Capital Goods
 - Fuel and Energy-Related Activities
 - Upstream Transportation and Distribution
 - Waste Generated In Operations
 - Business Travel
 - Employee Commuting
 - Upstream Leased Assets
- Downstream
 - Downstream leased assets
 - Investments

Additional categories in our context include:

- Student Commuting (Upstream)
- Water Supply and Wastewater Treatment (Upstream)

Since the 2005-06 academic year we have accounted for and reported against our scope 1 and 2 emissions, and our scope 3 emissions from the 2012-13 academic year. For scopes 1 and 2, emissions are calculated by applying the UK Government issued carbon emission factors for the selected year to the associated fuel and energy source to the consumption we collect for University owned-assets. For scope 3, data collection methodologies and data quality vary from source to source, and are detailed later in this report.

Our data collection methodologies are internally and externally audited annually in line with our ISO 14001 and ISO 50001 recertification processes.

Our emissions reporting year follows the University academic year, which runs from August to July.

The emissions and targets documented in this plan apply only within the scope of our Environmental and Energy Management Systems i.e. the provision of education and research, and the management of buildings, laboratories and land at the University's UK sites. They do not currently include for our international campuses in Malaysia and Singapore. We are planning for environmental aspect and impact assessments to take place at these sites to better understand the key risks and opportunities, with a view to bringing these in to a future iteration of the Plan.

It is also prudent to note that emissions reporting is always inherently an estimation and not an exact science (through the use of national-scale conversion factors, and where gaps may occur, estimations on energy consumption, resource usage and activity level), and figures should not be considered exact. Data and information used within this report will always be the best available, and we will continue to improve data quality in line with relevant guidance, advancement in technology, and our environmental and energy management systems' requirements.

In many cases, we have included actions within the plans documented below for the increase in quality of our data collection processes, particularly for scope 3 emission sources which are often more difficult to monitor and measure.

PERFORMANCE TO DATE

NEWCASTLE UNIVERSITY SCOPE 1 AND 2 EMISSIONS TO DATE

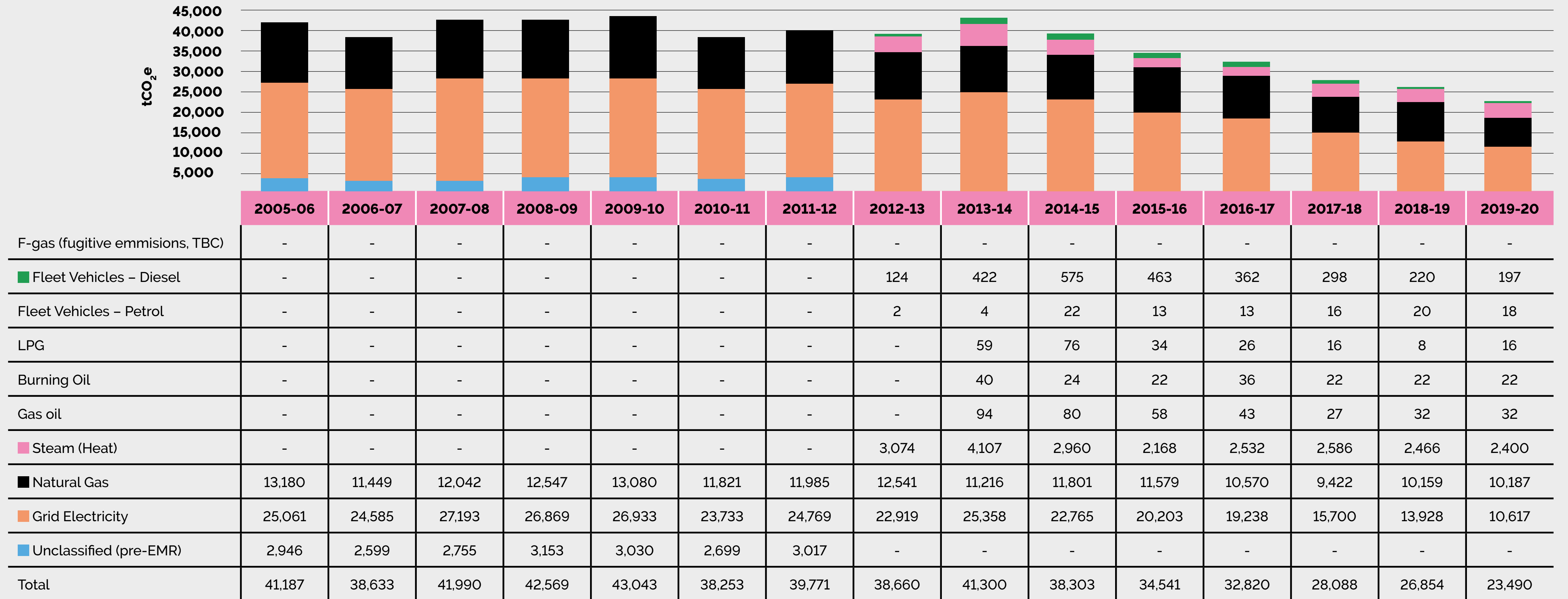


FIGURE 2
Newcastle University scope 1 and 2 carbon emissions

As shown in figure 2, University scope 1 and 2 emissions have declined year on year since the 2013/14 academic year with 2018/19 emissions (last full year pre-COVID) equating to a reduction of 38% against the peak (2009/10 year) and a reduction of 35% against the base year (2005/06). This is despite significant physical growth of the University estate and increases in colleague and student numbers since 2009/10, and can be attributed to both our climate action efforts to date coupled with successive reductions in the national grid carbon factor for electricity, where the greatest savings can be seen.

SCOPE 3

Historically, we have reported our Scope 3 carbon emissions as per the requirements of HESA's EMR submission. The format of the return categorises Scope 3 emissions as follows:

- Business Travel
- Colleagues Commuting
- Student Commuting
- Supply Chain
- Waste
- Water Supply and Wastewater Treatment

From October 2019 to March 2020, we engaged with the Carbon Trust and commissioned an emissions data materiality and quality assessment of our scope 3 sources in line with the GHG Protocol scope 3 reporting standards. The findings of this exercise, available to read here, have enabled us to better quantify the significance of each activity area and therefore where to prioritise our actions to enhance data quality and reduce emissions (see Table 2).

As mentioned earlier in this report, we have two additional categories in 'student commuting' and 'water supply and wastewater treatment'. In terms of materiality and quality, student commuting is deemed to have a similar data quality score as colleagues commuting, but a higher significance due to the relative sizes of the two populations. Water supply and waste water treatment is of low significance in relation to all other scope 3 sources, with a high data quality scoring due to our available metering and data logging capacity.



TABLE 2 Newcastle University scope 3 emissions materiality and data quality assessment, March 2020

			Weighted Scoring	Aggregated Scoring
			(0-100)	(0-100)
	Category	Scope 3 Category	Total Materiality	Total Data Quality
Upstream	1	Purchased Goods and Services	74	52
	2	Capital Goods	73	52
	3	Fuel And Energy Related Activities	44	64
	4	Upstream Transportation and Distribution	19	-
	5	Waste Generated In Operations	49	76
	6	Business Travel	58	70
	7	Employee Commuting	34	58
	8	Upstream Leased Assets	13	46
Downstream	9	Downstream Transportation and Distribution	-	-
	10	Processing Of Sold Products	-	-
	11	Use of Sold Products	-	-
	12	End of Life Treatment of Sold Products	-	-
	13	Downstream Leased Assets	36	40
	14	Franchises	-	-
	15	Investments	66	58

Whilst we will continue to report our emissions to HESA within the yearly EMR cycle, for the purposes of this plan and our own reporting, from this year we will adopt the GHG protocol standard and those categories applicable to us (as underlined in the 'Accounting for our emissions' section of this document).

FIGURE 3

Newcastle University scope 3 emissions – headline activity % breakdown (tCO₂e)

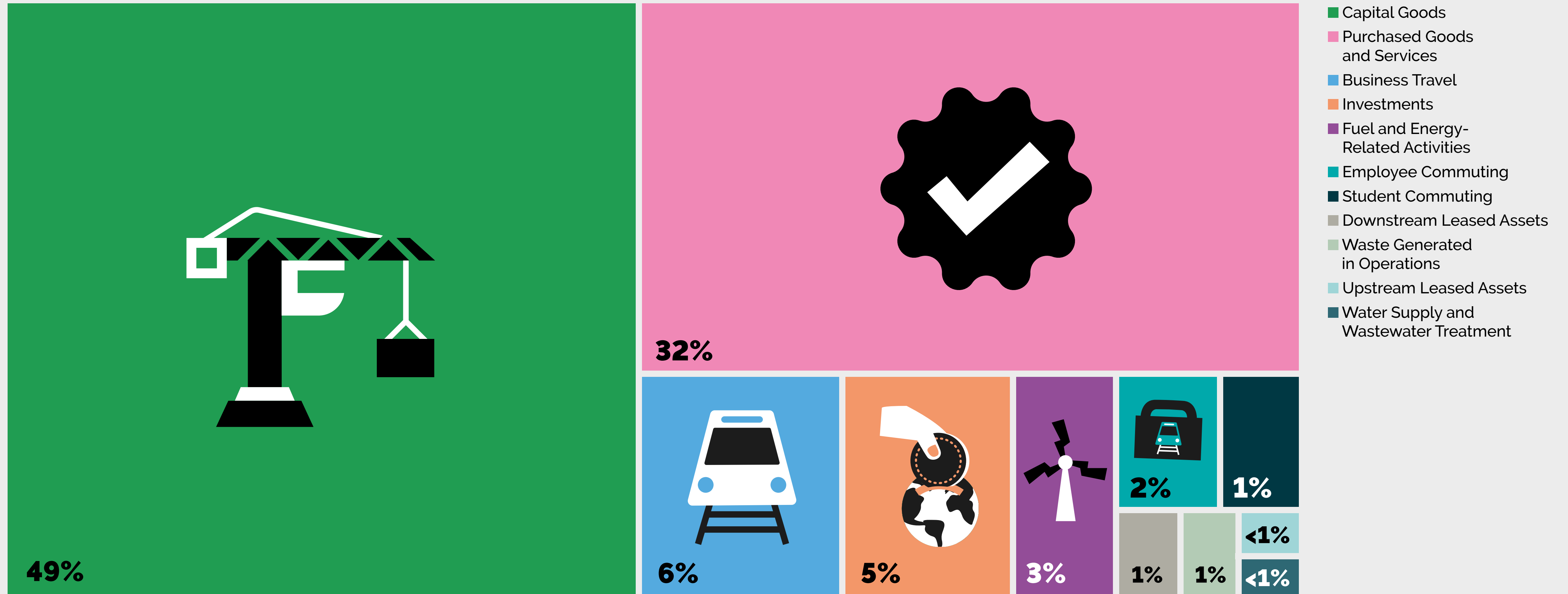


TABLE 3 Newcastle University scope 3 emissions

		Emission source	2018-19 (tCO ₂ e)
Upstream	Purchased goods and services	Business Services	10,026
		Food and Catering	3,421
		Manufactured Fuels, Chemicals and Glasses	7,642
		Medical and Precision Instruments	249
		Other Manufactured Products	5,674
		Other Procurement	7,621
		Paper Products	3,974
		Unclassified	272
	Capital goods	Construction	55,157
		Information and Communication Technologies	4,975
	Fuel and energy-related activities	Natural Gas	1,276
		Gas Oil	10
		Petrol	0
		Diesel	7
		Electricity	2,483
		Burning Oil	5
		LPG	2

		Emission source	2018-19 (tCO ₂ e)
Upstream	Waste generated in operations	Waste Anaerobic digestion	1
		Waste Incinerated	3
		Waste Landfilled	512
		Waste Recycled	147
		Energy Recovery	24
	Business travel	Rail	160
		Taxi	52
		Grey Fleet	276
		Coach	237
		Flights	6,629
	Employee commuting	Company Cars	122
		Rail	256
		Taxi	1
		Motorcycle/Moped	33
		Bus/Coach	342
		Flights	114
	Car	1,529	

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TABLE 3 Newcastle University scope 3 emissions

		Emission source	2018-19 (tCO ₂ e)	
Upstream	Student commuting ²¹	Rail	222	
		Taxi	33	
		Motorcycle/Moped	11	
		Coach	419	
		Flights	-	
		Car	1,062	
	Upstream leased assets	Business School: Electricity	358	
		Business School: Gas	164	
		Team Valley Store: Electricity	9	
		Team Valley Store: Gas	68	
	Water supply and wastewater treatment	Water Supply	107	
		Waste Water Treatment	210	
	Total upstream scope 3 emissions			115,895

		Emission source	2018-19 (tCO ₂ e)
Downstream	Downstream leased assets	Apportioned Electricity	371
		Apportioned Gas	720
	Investments	Baillie Gifford: Global Alpha Choice Fund	2,092
		Royal London Asset Management: Sustainable Leaders Trust Fund	1,809
		Royal London Asset Management: Ethical Bond	1,157
		Aviva: Alternative Investment Fund (AIF)	957
	Total downstream scope 3 emissions		

As underlined by figure 3, the largest constituent scope 3 emission source for the 2018-19 year was capital goods, driven by a sharp increase in construction-related emissions (316% increase compared to 17,066 tCO₂e in 2017-18) as a direct result of recent expansion in the University estate. Construction-related emissions can be volatile year on year and are dependent on the University's construction programmes, which have been considerable since 2017-18 to the current year with the development of our Helix site, Park View Student Village, the Dame Margaret Barbour building and Sport Centre extension projects. It is expected that this will comprise a smaller percentage of our scope 3 emissions from this reporting year onwards as our construction activities lessen, both in terms of the total number of projects and a shift to refurbishing existing building stock as opposed to full new build developments.

The second largest contributor to our scope 3 emissions are procurement-related activities which are consistently a significant portion of our footprint. This covers the range of purchased goods and services across the entire organisation throughout the year, as evidenced in table 3.

The final category of note is business travel undertaken by University colleagues, within which air travel dwarfs all other travel modes with respect to absolute emissions production.

As mentioned earlier in this report and highlighted in table 2, scope 3 emissions are much more difficult to calculate, methodologies are weaker, and reliability of data can vary between each category. In some cases we may have accurate 'consumption' or 'usage' data, but little knowledge on the whole life-cycle, carbon intensity of the activity and therefore lack a truly representative carbon conversion factor(s) eg investments.

In other cases, it may be that we understand the impact of an activity but monitoring and measuring the level at which it takes place is not at the desired standard and not all of the activity is captured eg colleague and student commuting. In the example of capital goods or purchased goods and services (embodied carbon), the robustness of both aspects could be improved. Because of this, a number of the first steps in our scope 3 source action plans are focused on improving our scope 3 accounting methodologies and data collection practices, as informed by our March 2020 scope 3 materiality and data quality assessment report.



COVID-19

During the preparation of this plan, the world continues to be gripped by the COVID-19 pandemic and the numerous impacts brought along with it, impacts shared indiscriminately but not equally across the world.

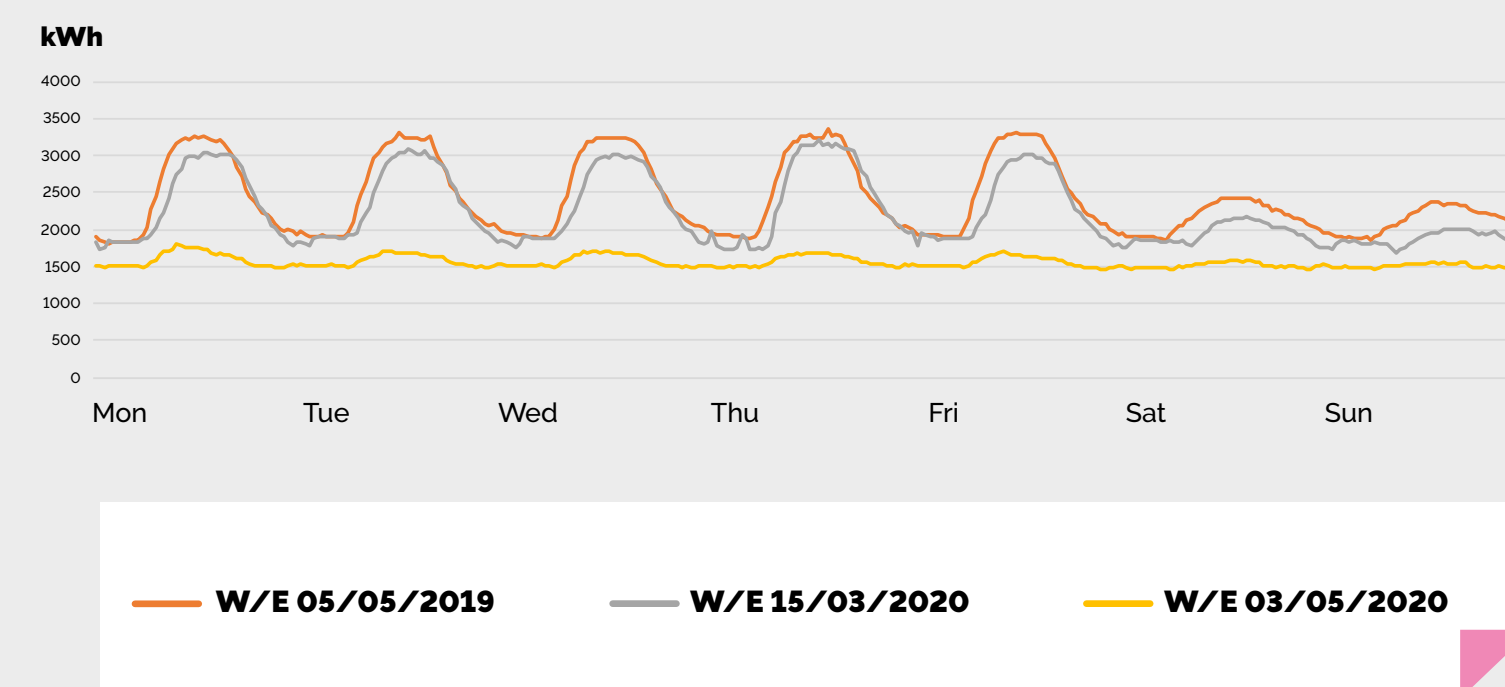
The new academic year has now begun following an extended period of hibernation for the University from the beginning of the national lockdown in March 2020, through to August 2020. During this time only essential workers and researchers were situated on campus and the vast majority of the estate was closed, with a gradual increase in campus footfall between August and the start of term in October 2020. The pause in teaching, research and other activities has had a profound effect on the University's reported carbon emissions for the 2019/20 year. This will also influence emissions in the 2020/21 year and beyond as we continue our teaching and research with reduced on-site occupancy and changing operations in response to the pandemic, most recently the national lockdown introduced on 5th January 2021.

Whilst COVID-19 has undoubtedly caused severe disruption across all areas of society, it provides an opportunity to rebuild a more sustainable future, and as a responsible institution, we will learn from the lessons this historic period has taught us. As an example, COVID-19 has proved an optimum test bed for monitoring the University's energy usage (and associated emissions) baseload ie the current minimum level of scope 1 and 2 emissions attainable in order to keep the estate functional, excluding teaching, research and other activities.

For example, early monitoring of power usage indicate the University's electricity baseload sits at approximately 50% of the University's peak operational level during 'normal' conditions.

Figure 4 shows half-hourly (HH) profile graphs of the University campus's main incoming electricity meter which supplies >65% of the entire University estate. It shows electricity consumption during a week in COVID-19 lockdown (week ending 03/05/2020), the week prior to the University shutdown (week ending 15/03/2020), and a comparative week in the previous calendar year (week ending 05/05/2019).

FIGURE 4
Newcastle University main substation electricity consumption (kWh) – 'normal' operation versus COVID-19 closure



This data, in combination with knowledge of those University activities and building plants that continue to operate, will allow us to target where this excessive usage is derived from and therefore increase energy efficiency and reduce carbon emissions.

In this case, we can ascertain that this baseload is comprised of predominantly refrigeration units, fixed research equipment, 24/7 ventilation systems, and IT infrastructure eg data centre(s), server rooms and PCs. In a time where financial sustainability is of vital importance, this targeting should allow us to make gains in the short term through changes in asset management, with lower capital investment required.

This document also serves as a statement of intent – Newcastle University remains focused on climate action, recognising that the climate crisis is still ever-present, and shall endeavour to maintain its investment in carbon reduction measures despite the ongoing considerable financial pressures resulting from COVID-19. An example of this continued investment is evident in the newly constructed 93.4 kilowatt peak (kWp), 230 module photovoltaic (PV) array on King's Gate, our main administrative building opposite the Newcastle Civic Centre, which was completed during the re-opening of our campus. This is our largest PV installation to date and is due to undergo an expansion to 116.4 kWp in spring 2021, with a larger second phase covering three new buildings coming in summer 2021. This is the beginning of what we aim to be an estate-wide rollout of the technology.

In reference to the IPCC 2018 report, it will take, 'unprecedented transitions in all aspects of society' to mitigate the climate crisis. As a collective, the world has shown that it can rapidly respond to unprecedented events and affect the change required to avert global disaster. If the climate crisis is handled with the same sense of urgency as the COVID-19 pandemic, which is essential as the potential consequences of the climate crisis are greater than those posed by the pandemic, Governments, organisations and individuals can deliver deep and lasting change for the better.

THE UNIVERSITY'S ELECTRICITY BASELOAD SITS AT APPROXIMATELY 50% OF THE UNIVERSITY'S PEAK OPERATIONAL LEVEL DURING 'NORMAL' CONDITIONS.

OF THE UNIVERSITY'S PEAK OPERATIONAL LEVEL DURING 'NORMAL' CONDITIONS.

OUR

TARGETS

OUR TARGETS

SCOPE 1 & 2

NET ZERO BY 2030

Our net-zero emissions target is defined as follows, with a target date of **31st July 2030**. The net zero target covers scope 1 and 2 emissions only.

The term 'net zero/net-zero' in this context is defined as:

Achieving an overall balance between greenhouse gases produced and those taken out of the atmosphere. This should be achieved through a rapid reduction in carbon emissions, but where zero carbon is not possible offsetting through carbon credits or sequestration through technological or nature-based solutions needs to be utilised.²²

To demonstrate leadership and to align with our partners across the city and the HE sector, we have brought forward our net zero target from our initial declaration of 31st July 2040 at the latest, to 31st July 2030. We are under no illusions as to the greater challenge this new target poses, but we also know it is the environmentally just course to take in response to what is an emergency situation.

Examples for reducing CO₂e emissions into the atmosphere include improving the energy efficiency of the estate, and removals of CO₂ from the atmosphere would be achieved via NETs such as Carbon Capture Utilisation and Storage (CCUS) or nature-based solutions such as tree planting. It should be noted that currently, most NETs remain unproven and do not exist at the scale necessary to deliver the UK net zero target – for this reason our target focusses on achieving absolute reductions.

Placing too much reliance on offsetting using unproven, yet to be realised, NETs risks resulting in 'business as usual' thinking; our people may develop a perception that we can 'buy our way out' of the climate crisis. Even if that were true, using our financial resources to offset our way to net zero would not align with our commitment to social and environmental justice as it abrogates responsibility for our environmental impacts, and would attempt to shift accountability to others (often technologically underdeveloped countries less equipped to cope with increasingly frequent extreme weather events) for securing the emissions reductions within offsetting systems.

However, achieving a net zero target at 2030 compared to 2040 will necessarily involve an increased contribution from offsetting – the 'net' in 'net zero'. The gap between actual and zero emissions at 2030, (even for scope 1 and 2 sources) will, in part, be influenced by factors beyond our control, especially the extent of decarbonisation of national / regional energy networks, and particularly the electricity grid. For example, a key technology for decarbonising heat is the heat pump (an electrically powered technology viewed as a preferred replacement for natural gas-fuelled systems), but unless the electricity supply is zero-carbon there will still be residual emissions from its operation which will need to be offset. The extent of those residual emissions will be greater in 2030 than they would be in 2040 due to higher grid carbon factors at this time. There is considerable uncertainty regarding the future price of offsets, and the reliability of the offset market as a whole including concerns around the permanence of carbon removal, additionality, verification etc. We will work with the sector, and not least our own research teams, to better understand these challenges eg through continued engagement with the EAUC Sector Wide Offsetting Initiative and projects including

'Farming for Carbon and Nature' where we are one of five pilot universities who will research soil carbon capture for offset at our farms.

So, for emissions which cannot be eliminated through mitigation measures, we will work in partnership with the sector to develop and deliver high quality, credible, offset projects by our target date. With a primary focus on carbon removal, and preferably within the UK and and/or North East region, we will also aim to generate added value through linking carbon projects with our charitable purpose: education, engagement, and research – in ways which support equity, social and environmental justice, and co-benefits beyond achieving net-zero carbon emissions alone.

At this time, we have chosen not to include Scope 3 emissions within our net zero target. Scope 3 sources, by definition, are not entirely within the University's control, overlapping as they do, with scope 1 and 2 emissions within other organisations' emissions inventories. To include scope 3 sources within the net zero target would potentially expose the university to significant and uncontrollable financial liabilities. Some estimates place the cost of NETs at up to £160/tCO₂e in 2050 which could conceivably equate to an annual offsetting bill of many millions of pounds if scope 3 sources were included in our net zero target, and the value for money of offsetting schemes in delivering environmental and social benefits is highly questionable at the present time.

Instead, we have developed a series of ambitious, challenging scope 3 targets and action plans that reflect our current level of influence, industry/sector specific contexts and future aspirations, which are all detailed in subsequent sections of this document.

This is not to say there is not a place for offsetting; we will keep our approach to this issue under review, especially as we enter the latter phases of this plan and/or as other opportunities arise. We are particularly interested in developing place-based solutions, especially where opportunities to support wider sustainability objectives such as benefiting local ecological systems and biodiversity exist. We will work with partners to explore these solutions, and at the time of writing are participating in a pilot scheme to develop the potential for offsetting at our farms.

Tracking progress in a similar manner as the UK Government, we have set a number of interim carbon budgets or 'phases' to the 2029/30 academic year. This has been informed by the best available framework at this time, the Tyndall Centre's recommended trajectory for Newcastle City and the urgency of early action. Our carbon budgets to 2030 are structured in Table 4, and will form the foundations of our future reporting against net zero and future phases of this plan:

TABLE 4

Newcastle University's interim carbon budgets to 2030

Phase	Budget period	Target emissions output within budget period (tCO ₂ e)	Target annual emissions level at the end of budget period (tCO ₂ e)	Target annual emissions level reduction as a % of baseline
1	2018-2022	91,302	18,798	-30%
2	2022-2024	27,525	12,084	-55%
3	2024-2026	16,122	6,713	-75%
4	2026-2028	7,385	2,685	-90%
5	2028-2030	1,343	0	-100%

The baseline year that we have adopted for the net-zero carbon target is 2018/19 as this was the last full year of reported emissions data before our net-zero carbon target was set, and the Tyndall Centre's paper produced. This is also the last full year of typical University operation prior to any COVID-19 influence.

We will continue to monitor what the science tells us, and may adjust these budgets/interim targets or introduce 'science-based target(s)' (SBTs) as required.

BEIS HIGHER EDUCATION CARBON PLEDGE

Newcastle University became a signatory of the BEIS Higher Education Carbon Pledge in October 2018, committing us to a 30% emissions reduction in scope 1 and 2 emissions by 31st July 2021, against a baseline year of 2009-10.

Our scope 1 and 2 emissions for the 2009-10 year totalled 43,042 tCO₂e, establishing our HE Carbon Pledge target as 30,130 tCO₂e by July 2021.

ISO 14001 ASPIRATIONAL 43% REDUCTION TARGET

We also maintained a long-standing, aspirational scope 1 and 2 emissions reduction target of 43% against a baseline year of 2005-06, by 31st July 2020.

Our scope 1 and 2 emissions for the 2005-06 year totalled 41,187 tCO₂e, establishing our aspirational target as 23,477 tCO₂e by July 2020.

PROJECTED PERFORMANCE AGAINST NET ZERO

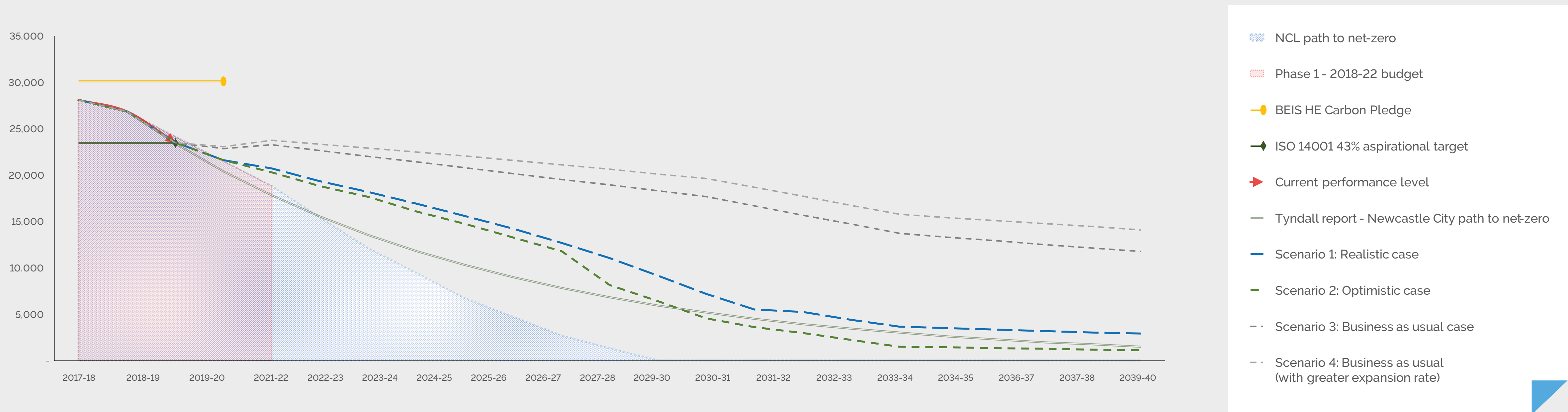


FIGURE 5
Newcastle University scope 1 & 2 carbon emissions performance to date and possible trajectories

Figure 5 demonstrates Newcastle University scope 1 and 2 carbon emissions performance against targets to date (2019-20), and also highlights possible trajectories for our emissions into the future. These trajectories are based on four potential scenarios, each of which make a number of assumptions and estimations across key variables:

- Carbon conversion factors (CFs) per emission source within each academic year eg the CF for grid electricity;
- University energy demand per each academic year, including forecast changes in the University estate (purchases, sales, demolitions and refurbishments);
- Future investment levels in on-site, University-owned renewable and/or ultra-low carbon energy supply and increases in renewable power/heating/cooling self-sufficiency;
- Ongoing committed, pipelined, and future projects; and
- Other external factors eg COVID-19, technological changes, etc.



The four trajectories presented in figure 3 provide an indication to scope 1 and 2 carbon emissions across the following scenarios:

- 1. Scenario 1** – the trajectory most likely to be taken by the University at the time of publishing, based on best available data and anticipated investment in carbon mitigation measures.
- 2. Scenario 2** – electricity grid CF, natural gas grid CF, University estate energy demand all decrease at greater than predicted rate, with lower end values by 2030 against the realistic scenario and greater investment levels in renewables, NETs and other technologies. Future capital projects to all be net zero builds / refurbishments.
- 3. Business as usual** – grid CF for electricity and gas follow Scenario 1 trend, but University estate energy demand to remain consistent with no increase in self-sufficiency from renewables, investment in NETs or other measures.
- 4. Business as usual with further estate expansion** – identical assumptions as scenario 3 with enhanced rate of increase in the University estate (m²) against assumed level (1% annually from 2020-21, capped at 20%).

In each of the cases provided there is an inevitable dependence on the UK Government in terms of their own performance against their emissions reduction targets, which in turn impact on the carbon intensity of the national electricity and gas networks. Because Newcastle University is predominantly a city-centre campus with a number of culturally important (listed) areas, we are geographically (spatially) constrained in our ability to install renewable technologies, and consequently it is anticipated that we will remain subject to the grid carbon factor(s) to a large degree by 2030. Government legislation, incentives, funding, taxation and engagement in the future will also have a significant effect on our performance.

Based on current data:

- The ISO14001 43% reduction target **has been achieved**;
- The BEIS Carbon Pledge target **will be achieved**; and
- There is a gap at 2030, even under the most optimistic scenario, between net-zero emissions and projected emissions. Filling the gap will require offsets and/or interventions yet to be determined.

For all scenarios, an estimation of emissions reduction derived from COVID-19 restrictions has been made with very little current knowledge on how long impacts from COVID-19 may last, here it is assumed electrical power and gas heating demand will be significantly lower until Summer 2021 and the anticipated return to on-site teaching. At the time of writing, it is still unknown what the true consequences of the changes in approach to teaching and research will be on carbon emissions. There is a risk that emissions from electricity, gas and steam consumption may in fact rise. The guidance the University is following in its approach to building services operation (i.e. heating and ventilation systems) in the coming academic year requires the use of entirely fresh outside air with no recirculation, increased air change rates and extended daily ventilation periods (24/7 in some areas), all of which hugely elevate power and heating demand for buildings in use.²³

It is also important to note that in some cases a decrease in scope 1 and 2 emissions resulting from COVID-19 may not equate to an overall reduction in total emissions, as to a degree the emissions will have shifted from scope 1 and 2 into scope 3 emissions as colleagues and students work remotely. It is extremely difficult to calculate the net effect of this as each colleague and student's working environment and activities will differ. Energy demand, travel patterns, etc. and therefore associated carbon emissions per capita (tCO₂e/FTE) will have significantly changed.

OUR TARGETS

SCOPE 3

For our scope 3 emissions, for Phase 1 we have prioritised by our largest contributing sources and set ambitious SMART targets against these. Whilst scope 3 emissions are not currently covered within our net-zero carbon target, we are implementing a similar, phased carbon budget approach in order to better monitor our progress. Given this plan is iterative and under constant review, we may look to bring certain scope 3 emission sources into our net zero target or develop a net zero target for all of scope 3, at a later date. These decisions will be guided by what is possible, desirable and technically achievable working collaboratively with sector bodies including EAUC, UUK, and AUDE to develop and define common approaches to scope 3 emission sources.

The four activity areas we have established targets against are:

- Construction Activities
- Purchased Goods and Services
- Business Travel
- Investments

This is not to say that we are ignoring our other scope 3 sources as these are still covered both later within this plan, and our ISO 14001 EMS and ISO 50001 EnMS action plans. However, for the purposes of this roadmap we have targeted our greatest emitters (covering 92% of our scope 3 footprint) in this first phase. When we are successful in meeting these key targets and the contribution of these activity areas diminishes in the future, we will then be able to turn more of our attention to other sources that carry more weighting.

CONSTRUCTION ACTIVITIES

Reduce our embodied carbon emissions from major capital projects below 800 kgCO₂e per m² of Gross Internal Area (GIA), by the end of Phase 1.

Due to the variability of our construction activities year on year, and further understanding required to better calculate the emissions impact of these, we have deemed it appropriate to apply a benchmarked target here rather than an absolute reduction.

By doing this, it is not only a more effective indicator of our performance through time, it also provides a standard by which each individual project must meet as driven by our new Sustainable Construction Specification (detailed in the '3. Capital Goods' sub-section), where the finer details on how this will be achieved are available in this document.

This target aligns with the Royal Institute of British Architects' (RIBA) 2030 'Climate Challenge' target for embodied carbon from non-domestic buildings for 2020, a framework we will likely adhere to unless we can feasibly surpass this target or other improved metrics become available.

PURCHASED GOODS AND SERVICES

Identify our top 10 carbon emitting goods 'material groups' and the key suppliers within them, establishing an emissions baseline per group by the end of Phase 1, with the goal of setting carbon reduction targets in Phase 2.

For purchased goods and services, we have selected a risk-based, targeted approach by honing in on those 'material groups' (eg general stationery, computer equipment, molecular biology reagents, etc.) that contribute the most to our procurement emissions alongside the more generalised work across this area.

We have also decided for this initial phase to focus on goods specifically and not services. Firstly, because data here is more robust, but also as typically there are more available options with goods selection than for services, allowing for relatively faster reductions to be made. Physical goods also tie in more closely with our adopted Circular Economy principles (described later in the Circular Economy section) through reducing and reusing what we can, and purchasing reused, recycled, and/or cleaner alternatives as much as possible.

Following the identification of those highest emitting groups and baseline setting, we will then engage with both the prominent suppliers and the marketplace directly to improve performance going forward and look to construct specific targets against each material group.

OUR TARGETS | **SCOPE 3**

BUSINESS TRAVEL

Cut annual emissions from business travel by 30% against a 2018-19 baseline, by the end of Phase 1.

For business travel emissions we have implemented an absolute reduction target of 30% as emissions from business travel has remained relatively consistent pre-COVID.

We will closely monitor our business travel activities over the coming academic year to assess the suitability of this target with respect to potential domestic and international travel restrictions that may still be in place due to the COVID-19 pandemic.



INVESTMENT

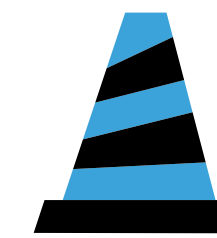
Through our upcoming tender for fund managers, investigate the options available for Paris-aligned investment funds, with a view to setting a carbon reduction target in Phase 2.

The investment market is rapidly evolving in relation to Environmental, Social and Governance (ESG) monitoring and performance. We will utilise independent research in advance of issuing the tender specification to identify the availability of low carbon/climate aligned options that meet with the University's requirements as a trustee. We will continue to actively engage with fund managers on the carbon intensity of our portfolio with a view to aligning our investment strategy with our net zero aims.

Action plans for achieving all our carbon targets across all scopes can be seen in our 10-point plan. All targets for scope 1 and 2 will use 2005-06 as the baseline year. As data quality for scope 3 emissions in 2005-06 was poor or non-existent, targets for scope 3 will use 2018-19 data as the baseline year unless specified otherwise.

KEY GOALS

CONSTRUCTION ACTIVITIES



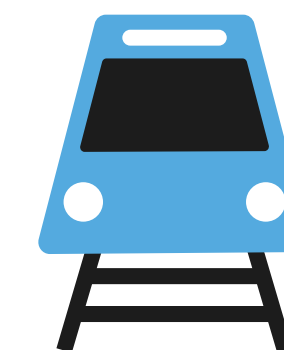
Reduce our embodied carbon emissions from major capital projects below 800 kgCO₂e per m² of Gross Internal Area (GIA)

PURCHASED GOODS AND SERVICES



Identify our top 10 carbon emitting goods 'material groups' and the key suppliers within them, establishing an emissions baseline per group

BUSINESS TRAVEL



Cut annual emissions from business travel by 30% against a 2018-19 baseline

INVESTMENT



Through our upcoming tender for fund managers, investigate the options available for Paris-aligned investment funds.

OUR

10-POINT

PLAN

1. ENERGY ORIGIN AND PROCUREMENT

2. ENERGY USE

3. CAPITAL GOODS

4. PURCHASED GOODS AND SERVICES

5. TRAVEL

6. INVESTMENTS

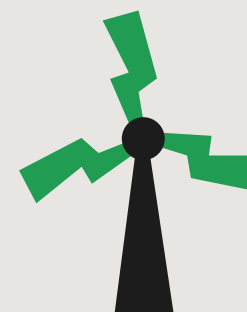
7. CIRCULAR ECONOMY

8. RESEARCH AND EDUCATION

9. LEADERSHIP AND GOVERNANCE

10. ENGAGEMENT

1 ENERGY ORIGIN AND PROCUREMENT



Energy use for building power, heating and cooling represents over 99% of our scope 1 and 2 emissions and are therefore our primary focus area as part of this Climate Action Plan, and our net zero target. This is mirrored both nationally and internationally as Governments grapple with decarbonising power and heat across a multitude of settings within the private, public and residential sectors.

There are many interventions that must be made in order to minimise the emissions produced from power, heating and cooling at local, national and international scales. These are the way in which the energy is delivered (transmitted and distributed), flexibility and efficiency of consumption, demand conservation, and of course the origin of that energy eg fossil fuels, renewables, etc. There is also a plethora of business/ financial models, products, technology, standards and guidance available spanning an intricate network of dependent, and in many cases historic factors that make the scale of the net zero task an enormous one, especially considering the pace at which the climate crisis must be addressed.

A key strength of the UK Government's approach to decarbonisation over the last decade has been the decarbonisation of the national electricity grid; the latest average grid carbon factor for 2020 has now fallen by 48% to 0.233kgCO₂e per kWh since 2002 (0.449kgCO₂e per kWh). However, the national gas grid has seen no reduction in its carbon intensity during this time as the vast majority of currently installed boiler and other gas-fired heating technology eg Combined Heat and Power (CHP) are designed to be fuelled by 100% natural gas only.

Alternative solutions such as blending hydrogen or other 'green' gases into the national gas network remain at an exploratory phase. The University has academic strengths in Energy Systems and hosts the National Centre for Energy Systems Integration (CESI). CESI is involved in many research projects including those looking at gas-grid decarbonisation using hydrogen. We aim for our campus to be a test-bed for innovation and research – including exploiting opportunities for carbon reduction arising from our own research.

Organisations, including Newcastle University, cannot rest on the actions of the Government alone, and in order to reach net zero we recognise we must invest in our own renewables capacity to provide zero and ultra-low carbon heating, cooling and power to our estate. Whilst we are constrained geographically being based in Newcastle city centre there is much we can do, including optimising our roof space for Solar PV and Solar Thermal for clean power, as well as renewably powered air and ground-source heat pumps and potentially 'green' hydrogen in the future for heating. Because most of our estate and regional electricity and gas transmission and distribution systems are already existing, most of our work will involve retrofit and refurbishment projects which increases the difficulty of the task. There are few 'one size fits all' approaches that can be taken and each building will need to be looked at closely depending on location, age, condition, function, ownership, future changes etc.

At Newcastle University, we are home to a leading academic research centre for energy whose role encompasses all challenges at all scales and disciplines relating to energy systems. Our efforts going forward in maximising the energy performance of the University will require a joint approach between our academic

and professional faculties, where in some circumstances it may be appropriate to employ a 'living-lab' approach and use our own estate as a test-bed for certain technologies or systems. We can then use our learning and expertise to aid other partners across the region and beyond, and become visibly leading across this space.

We are also considering further action in the procurement of our energy and our strategy around this. Our existing electricity supply contract is part of Ofgem's Renewable Energy Guarantee of Origin (REGO) scheme, whereby our all our electricity is provided from renewable sources, primarily offshore wind. In 2019 we also entered into a Power Purchase Agreement (PPA) via The Energy Consortium (TEC) and we now purchase 20% of our electricity baseload from a portfolio of onshore wind farms. However, current UK carbon accounting methodologies mean that we cannot account for all of our electricity use as zero carbon as the power is not delivered to us directly (privately wired) from these stations - we are still subject to the national grid carbon factor as our estate draws power from the national electricity network. We plan to work with TEC in the future to increase the percentage of our electricity which is supplied under a PPA and in future contracts we will be aiming to achieve 'additionality' i.e. enabling the construction of new renewable power capacity, which will in turn lower the regional and national grid carbon factor and reduce emissions to atmosphere, amongst other benefits.

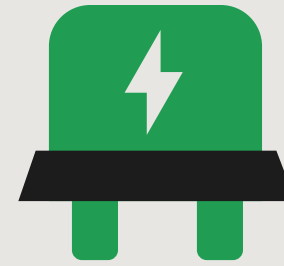
The actions as part of this plan are also captured and managed via our ISO 50001 certified EnMS and our Energy Policy, allowing for effectual and robust governance. We will work alongside the city to ensure any measures are in keeping with the city's plans and consult all necessary stakeholders.

1 ENERGY ORIGIN AND PROCUREMENT

	OBJECTIVE	TARGET	KPI	ACTION	EMISSIONS SOURCE
PHASE 1	Enhance self-sufficiency from on-site renewables.	Increase kWh power generation from our own renewable assets by 50% by the end of Phase 1, against 2018-19 levels.		Complete campus-wide feasibility assessment of Solar PV retrofit installations and commence with Phase 1 construction following the commissioning of the King's Gate pilot PV project.	Scope 2 – Grid-Supplied Electricity
	Complete campus-wide feasibility assessment of Solar PV retrofit installations and commence with Phase 1 construction following the commissioning of the King's Gate pilot PV project.			Scope 3 – Fuel and Energy-Related Activities	
	Decarbonisation of the local and regional electricity and gas grids.	Enable improvements in the region's renewable capacity through a new PPA or similar venture, by the end of Phase 1.			
	Decarbonise our building heating systems.	Decommission all natural gas-fuelled heating systems by 2035.	No. of operational natural gas heating systems.	<p>Further develop our understanding of heat pump, Solar PV-Thermal and other low carbon heating technologies (including electrification) from a retrofit context and commence installations from the beginning of Phase 2.</p> <p>Commissioning of our Merz Court biofuel CHP unit, due for completion September 2021.</p> <p>Implementation of other heat decarbonisation projects and creation of a 'Heat Carbonisation Plan', in line with the requirements and funding available as part of the new BEIS Public Sector Decarbonisation Scheme.</p>	<p>Scope 1 – Natural Gas (Heating)</p> <p>Scope 3 – Fuel and Energy-Related Activities</p>

2

ENERGY USE



As touched on in point 1, not only must we invest in our own renewable capacity and decarbonising the energy we use, but in tandem we will implement technology, systems and behaviours to reduce the energy demand of our estate.

To date we have successfully utilised our Salix recycling fund to commission over £3m of projects, rendering circa. 4,000tCO₂e savings per year. The recycling fund model sees any of the savings in energy we make reinvested back into the fund, allowing it to refinance further projects, which is a funding route we will continue to operate in order to commit energy efficiency and conservation projects. This does not account for the energy savings measures we have invested in as part of our internally-funded, capital development and building improvements works. We will too continue to explore other opportunities and partnerships at local and national scale to further accelerate the enhancement of the efficiency of our facilities.

In a similar vein as with energy origin technologies, unless incorporated within a new build or major refurbishment scheme, any efficiency and conservation installations will need to be retrofitted and thus the resources required for completion are greater. Energy efficiency projects can vary greatly in scale and type including: installing LED lighting, expanding our Building Management Systems (BMS), replacing aged and inefficient fixed assets (eg refrigeration units, drying cabinets, research and IT equipment), upgrading ventilation and heating systems, further insulation and window glazing, and draught proofing, amongst others measures. These can either be undertaken at a very local level eg an individual room, up to a full estate-wide enterprise.

Whilst we can achieve sizeable reductions in our emissions through the installation of new technology and building plant, colleague and student behaviours are of equal importance. Information relating to colleagues and student engagement can be found later in point ten of this section, but it is of particularly consequence here as each and every person has energy usage attributed to them and therefore possess the ability to take positive actions towards reducing their own energy and carbon footprint. Collectively these individual choices have a prodigious impact on the University's carbon emissions output be it on the academic estate or within student residences, as evidenced through our COVID-19 lockdown monitoring. Colleagues and students also acquire a unique understanding of their remit and where energy saving opportunities lie, making effective engagement an incredibly important tool in the fight against the climate crisis.

As with the previous sub-section, all actions outlined are managed via our ISO 50001 EnMS and Energy Policy with progress against targets constantly monitored.



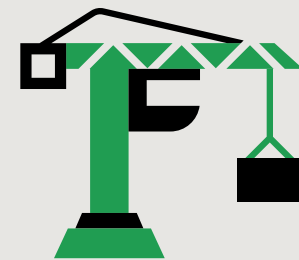
To date we have successfully utilised our Salix recycling fund to commission over £3m of projects, rendering circa. 4,000tCO₂e savings per year.

2 ENERGY USE

	OBJECTIVE	TARGET	KPI	ACTION	EMISSIONS SOURCE
PHASE 1	Continual improvement in the University's energy performance.	Reduce the University's total energy consumption (kWh per m ² space area) by 15% against 2018-19 levels, by the end of Phase 1.		Improve the energy performance of existing buildings and facilities through continued investment in energy efficiency and conservation measures eg BMS expansion, capital refurbishment projects, LED lighting, heating and ventilation system upgrades etc. utilising our Salix and other funding streams.	Scope 1 - Natural Gas (Heating) Scope 1 - Gas Oil (Heating) Scope 1 - Burning Oil (Heating) Scope 1 - Liquefied Petroleum Gas (Lpg) (Heating) Scope 2 - Grid-Supplied Electricity Scope 2 - Steam (Or Heat) Scope 3 - Fuel and Energy-Related Activities
				Ensure life cycle energy performance considerations are made for high value purchasing activities (£>50k).	
				Optimise the energy performance of new buildings and facilities, using the University's new Sustainable Construction Framework to achieve our new energy performance benchmark of <50 kWh per m ² space area for new developments.	
				Increase number of colleague members actively engaged in energy management-related activities (see section 10: Engagement).	
				Increase number of student members actively engaged in energy management-related activities by initiating new student-facing engagement opportunities through our residences team, internships, and volunteering (see section 10: Engagement).	

3

CAPITAL GOODS



Capital goods are final products that have an extended life and are used by a company to manufacture a product, provide a service, or sell, store, and deliver merchandise. For the University this accounts for emissions from two primary sources: construction and information and communication technologies, of which the former is the significantly larger emitter. Due to this weighting, we have and will remain predominantly focussed on reducing emissions from construction activities in Phase 1 as outlined in the action plan.

In the context of this section we refer to the 'embodied carbon' from construction, that is the scope 3 emissions output from the manufacturing and transportation of materials to the on-site development of a facility, not the utilities consumption or other operational changes brought about as a result of the work (this is covered in point two).

The most recognised sustainable construction standards available, notably the BREEAM, WELL, and Passivhaus standards, are largely aimed at operational (scope 1 and 2) carbon, environmental and wellbeing impacts upon completion of a build and not the embodied carbon of the construction itself. These certifications can also be considered somewhat rigid and prescriptive in their approach where not all elements of the standard will be appropriate or even feasible dependant on the scheme in question.

Steps are being made in this area however, with the release of the UK Green Building Council's, 'Tackling embodied carbon in buildings' 2015 guidance and other sources such as WRAP.^{25 26}

From this material the sector is learning that the majority of the embodied carbon of a build can be found in its materials selection and super-structure design, which in turn has knock-on effects for the remainder of the build in terms of the options available for internal structures and services, and external façade or cladding. Each selection has a consequence later in the building design, meaning early decision making is key i.e. Stage 0 of the RIBA Plan of Work.²⁷

To circumvent the issues that existing construction certifications provide, and to delineate a route to the achievement of our construction emissions target of 800kgCO₂e per m² of space area (specifically within BS EN 15978 modules A, B1-B5, C and D), this year we published our own bespoke Newcastle University Sustainable Framework for Construction. This document is to be employed on all major University capital projects (>£1m in value) with the goal of transitioning this framework to lower value refurbishment projects in a later phase of this plan.

We are also liaising closely with our contractors to improve our understanding of the barriers in emissions measuring from an industry perspective, as well as the opportunities and new tools that may become available to raise data quality such as the 'One Click LCA' or 'eTool LCA' solutions as examples.

Information and communication technologies ties in very closely with procurement of goods and services methodologies as emissions are measured against £ spend, utilising a single carbon conversion factor. Here it is of greater importance to enhance our emissions accounting methodologies as the current route dictates only a reduction in £ spend will generate carbon savings rather than specifying better performing organisations or manufactured products. In reality, both measures are required: a decrease in procurement level through the reuse of existing assets where possible, and where the purchase of goods is required, ensuring a robust life cycle analysis is carried out to drive down the embodied and operational carbon of these assets. We are currently developing our actions with respect to IT emissions and will update this plan accordingly.



3 CAPITAL GOODS

	OBJECTIVE	TARGET	KPI	ACTION	EMISSIONS SOURCE
PHASE 1	Minimise the embodied carbon emissions associated with our capital schemes.	Reduce the University's total energy consumption (kWh per m ² space area) by 15% against 2018-19 levels, by the end of Phase 1.		Continually revise our Sustainable Construction Framework guidance document and tighten performance specifications on embodied carbon within this.	Scope 3 – Capital Goods (Construction)
	Advance our embodied carbon accounting methodologies and increase the accuracy of our emissions reporting from construction activities.				
	Decrease the need for further estate expansion.	Following the acquisition of the Campus for Ageing and Vitality site in at the end of Phase 1, <1% increase in estate size by the end of Phase 2 (Gross Internal Area, m ²).		Optimise space usage through provision of flexible research facilities, offices, and working spaces (estate masterplanning), and focus resources on refurbishing existing building stock to 'net-zero standard'.	
	Minimise the embodied carbon emissions associated with our IT infrastructure and provision.			Targets, KPIs and actions TBC.	

4 PURCHASED GOODS AND SERVICES



In the absence of significant construction works on our estate, the purchasing of goods and services at the University would be our single largest carbon emissions source, surpassing the entirety of our Scope 1 and Scope 2 emissions successively year on year. Procurement at Newcastle University can range from anything between legal services to a brand-new MRI scanner.

Naturally, due to the sheer volume of procurement activities that take place on a daily basis across all facets of our organisation and our ability to manage and capture these, there is an innate degree of estimation involved in calculating these emissions and a lower degree of confidence relative to our other sources as a result.

Typically, most procurement activities are managed through the raising of purchase orders and receipt of invoices which are recorded and monitored within the University's central finance system. Though the majority of purchases are covered via this process, this only applies to orders over a certain value where the availability of local purchasing cards and lower-value transactions are more difficult to capture. Data quality is further diminished as those purchases that are included for reporting are divided into category areas (as underlined in the 'scope 3' sub-section of this report) and emissions calculated by multiplying £ spend per each category against a single designated carbon factor. This is the recognised standard of accounting for carbon across the HE sector, but a metric that could be improved.

This is why our initial priorities towards reducing our emissions from purchased goods and services are steered towards developing data quality and ensuring we capture as many of the University's transactions as we can, as well as working with external partners and our own colleagues on our accounting methodologies. As evidenced earlier in this report, we have already made advances on this point through our work with the Carbon Trust and will build on this in the immediate term, interrogating new data streams to identify our top 10 emitting goods 'material groups' to improve performance.

Other means of tackling emissions from this source include embedding life cycle assessments deeper into our procurement processes and allowing this to carry greater weighting in the final award and decision making. This isn't always possible depending on the nature of the purchase, particularly for specialised research equipment, niche markets or services where alternatives are increasingly scarce.

In later stages of this plan, we will begin evaluating the traditional business case model itself and the method in which projects, goods or services are valued, to look beyond financial payback and other standard commercial-based scoring and increase focus on the derived social and environmental value.



4 PURCHASED GOODS AND SERVICES

	OBJECTIVE	TARGET	KPI	ACTION	EMISSIONS SOURCE
PHASE 1	Apply a prioritised, risk-based approach to managing emissions from procurement activities.	Identify our 10 most emitting 'material groups', and establish carbon emissions baselines per group by the end of Phase 1.	Develop emissions baseline for individual groups.	Embed new purchasing data and emissions calculation annual reporting system.	Scope 3 – Purchased Goods and Services
				Identify the top 10 emitting material groups, and establish emissions baseline for each.	
		Through engaging with both suppliers and purchasers, develop a set of carbon reduction targets and actions for implementation in Phase 2.	Introduction of new targets and actions in the first Climate Action Plan report of Phase 2.	Identify the keystone suppliers per material group (i.e. where most spend is located), and engage with them directly to improve performance.	
				Work with those NCL stakeholders (purchasers) directly involved in procuring within these material groups and provide guidance and resource to assess alternatives.	

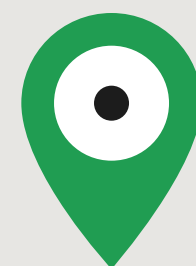
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4 PURCHASED GOODS AND SERVICES

	OBJECTIVE	TARGET	KPI	ACTION	EMISSIONS SOURCE
PHASE 1	Become visibly leading in sustainable procurement	Achieve DEFRA Flexible Framework Level 5 by the end of Phase 1.			
	Improve carbon emissions data quality from purchased goods and services.	Develop more accurate carbon emission metrics, per material group by the end of Phase 1, and apply best available methodologies for reporting in Phase 2.		Begin analysing purchasing card (low-value) data trends and highlight areas for improvement.	Scope 3 – Purchased Goods and Services
				Engage with key suppliers within highest emitting material groups to ascertain life-cycle carbon emissions figures for their supplied goods.	
				Liaise with regional and national procurement bodies eg NEUPC to drive improvements in emissions calculations for goods and services and source best available data.	
Assess the quality of our emission metrics i.e. conversion factors and benchmarks, with external validation if required.					
Minimise the embodied carbon emissions associated with our IT infrastructure and provision.	100% of electronic and electrical equipment purchases >£50k include energy usage as part of the assessment criteria.			Inclusion of energy assessment in necessary tender documentation, with continued auditing within the University's EMS and EnMS audit cycle.	Scope 3 – Purchased Goods and Services

5

TRAVEL



Within the UK Government's Clean Growth Strategy, travel features heavily as one of the key sectors in which the Government aims to transition to a low carbon future. The policies and proposals outlined in the strategy include measures such as banning the sale of new petrol and diesel cars and vans by 2040 (likely to be brought forward to 2035), providing funding to support the uptake of Ultra Low Emission Vehicles, the development of the UK electric vehicle (EV) charging network and hydrogen advancement programme, and potential further investment in cycling and walking infrastructure to promote the uptake of low/zero carbon travel alternatives.

We have also seen extensive consultation take place across major cities in the UK on the implementation of clean air zones by local authorities, including Newcastle upon Tyne, with the boundaries of the zone(s) yet to be defined. Our approach at the University will be somewhat dependent on the outcome of the plans when they are introduced as >90% of our estate is based within Newcastle city centre and will eventually capture the majority of our colleagues and students travel.

Our carbon emissions from travel-related activities are currently split into three distinct categories: business travel, colleague commuting, and (term-time) student commuting.

It should be noted that student out of term-time commuting – and particularly international student commuting from the student's country of origin to term-time address is not currently included within our carbon footprint. When following the methodology defined within the WRI GHG protocol,²⁸ these emissions are considered to be outside of scope. In the absence of mandatory reporting requirements few universities are collecting robust data for this emission source. However, universities have very considerable influence over the scale of these emissions, and the emissions themselves are very significant – it is estimated that at sector level, emissions from this source may be greater than total scope 1 and 2 emissions.²⁹ For these reasons, many stakeholders consider this to be a weakness of the WRI GHG Protocol when applied in a university context, and take the view that such emissions should be calculated and considered as part of each university's scope 3 footprint. At the time of writing, this issue is under active consideration by bodies including UUK and EAUC. We are engaging in those discussions and liaising with colleagues within the University in order to influence decision-making. We feel it is likely that in future emissions from international student commuting may be considered part of a University's scope 3 footprint. In any case, we will work with our International Office to understand how we might begin to collect/access relevant data to allow these emissions to be calculated, in order that we can understand, manage and report these emissions as part of our Global strategy, and align to any new reporting standard introduced in future years.

Current actions to abate carbon from University travel will target business travel, colleague commuting, and (term-time) student commuting. One of our key scope 3 targets tackles business travel emissions - largely resulting from domestic and international flights for business purposes. Within this phase of the plan, there are few anticipated changes in aerospace technology which will reduce the carbon intensity of air travel. We are therefore exploring what financial, technical and policy changes are required to enable our core strategies to be delivered alongside a significant cut in business travel by air.

For colleague and student commuting, we will look to build on our existing EV charging provision and accessibility to EV vehicles, as well as promoting and incentivising the use of low carbon travel options eg active travel and public transport.

COVID-19 has brought about distinct opportunities and barriers in this space, the main barrier being consumer confidence and attitudes towards public transport following the pandemic. However, there are benefits with the reduced levels of travel facilitated through the implementation of agile working practices, and further investment in videoconferencing technology easing the frequency of face-to-face meetings and conferencing, particularly with respect to air travel.

5 TRAVEL

	OBJECTIVE	TARGET	KPI	ACTION	EMISSIONS SOURCE
PHASE 1	Minimise environmental impacts of business travel.	Cut annual emissions from business travel by 30% against a 2018-19 baseline, by the end of Phase 1.	%, tCO ₂ e.	Enhance our business travel data collection processes including further detailed journey mapping.	Scope 3 – Business Travel
				Enable/incentivise alternatives to air travel through methods such as investment in videoconferencing technology, an internal carbon taxation scheme, subsidies, or other actions.	
	Reduce emissions associated with owned vehicle fleet.	Following university sustainable purchasing processes, where the need for a fleet* vehicle is identified, procure only zero emission vehicles	% of University owned vehicles that are zero emission.	Develop improved fleet vehicle register with life-span analysis to prioritise replacements and maximise life of existing vehicles.	Scope 1 – Fleet Vehicles
				Provide funding for EV replacement and EV charging points through our Salix recycling fund, internal funding, or other finance route.	
	Establish and promote sustainable travel options for mobility to, from and between campus sites.	Improve the response rate of our bi-annual colleagues and student travel surveys to 30% by July 2022.	Response rate as a % of colleagues / student population.	Work with NUSU, Organisational Development and other key University stakeholders to enlarge our outreach for our surveys.	Scope 3 – Colleagues Commuting Scope 3 – Student Commuting
				Further develop our social media platforms to generate more 'hits' and maintain a more active online presence.	
Provide more incentives to survey completion via prizes and / or reducing survey completion time.					

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*excludes agricultural vehicles

5 TRAVEL

PHASE 1	OBJECTIVE	TARGET	KPI	ACTION	EMISSIONS SOURCE
	Establish and promote sustainable travel options for mobility to, from and between campus sites.	Decrease % of colleagues and students using car and taxi modes of transport for commuting purposes.	% car and taxi usage as returned via our colleagues / student travel surveys.	Incentivise the uptake of public transport, cycling and walking by providing additional showering and cycle parking facilities, and promoting cycle-to-work schemes.	Scope 3 – Colleagues Commuting Scope 3 – Student Commuting
				Collaborate with local authorities, private and public partners to develop new travel modes and networks eg e-scooters and e-bikes.	
		Publish a new, update University Travel plan by July 2022.	Invest resource in colleagues training and / or third party assistance in the preparation and publishing of an updated University Travel Plan document.		
		Work with the sector to agree and align international student travel emissions reporting.	Agreed methodology.	Liaise with relevant sectoral bodies and working groups including EAUC's scope 3 Working Group and UUK's climate roundtable which are actively considering these issues,	
		Improve cycle and other future travel mode parking infrastructure, accessibility and sustainability.	Number of parking spaces.	Assess our parking infrastructure suitability with respect to new travel patterns, behaviours and technology, and develop new parking systems to accommodate.	
		Consider options to improve interconnection of Campus for Ageing Vitality, Helix and central campus.	CAV masterplan to consider how low carbon transport systems will be enabled for and to/from the site.		

6 INVESTMENTS



The University's endowment funds originate from donations from individuals and corporate bodies that are given over several years and are often donated for a specific purpose. Use of endowment funds is governed by the Trustee Act (2000) and external fund managers are appointed to invest the funds on the University's behalf.

In line with the University's investment strategy, the funds are held in both active and passive investments including equities, bonds and Alternative Investment Funds (AIFs). The University's investments are also governed by its **Socially Responsible Investment Policy (SRIP)**, which describes our investment approach and outlines a process by which members of the University community can challenge the University's investments.

In October 2015, in response to a call from our students to divest University endowments from fossil fuel companies, we formed our **Carbon Advisory Group** to consider links to the fossil fuel industry throughout University activity and recommend actions for reducing exposure to fossil fuel extractives across investments. Following incremental decline in exposure to fossil fuel extraction and production companies since 2015, and after revisiting the work in 2019, the University achieved divestment from these companies within its equities, and are in the process of ensuring this is the case throughout its other assets. This is being achieved through a combination of changes to investment strategy as well as active engagement with fund managers, and the exclusion will be written into the University's SRIP for application throughout future investments.

In addition to recommendations on fossil fuel investments, the Carbon Advisory Group also considered the wider Environmental, Social and Governance (ESG) qualities of the University's investments, including requesting that fund managers provide information relating to the carbon footprint of their funds.

As we continue our work to improve ESG performance of our investment funds, we seek ways to align the carbon reduction strategies within companies across our investment funds with the net zero aims for our own operations. The Responsible Investment market is rapidly developing in this space and going forwards we seek to combine research-informed decision making on our investment strategy with continued active engagement through our appointed fund managers to both improve emissions accounting and make substantial savings in the carbon impact of our investments.



6 INVESTMENTS

	OBJECTIVE	TARGET	KPI	ACTION	EMISSIONS SOURCE
PHASE 1	Reduce carbon emissions associated with the University's endowment investment portfolio.	Research due ahead of tender in Spring 2021.	Integration of carbon (and wider ESG) monitoring within tender specification.	The next tender for appointment of fund managers is due in 2021. Include in the research commissioned to inform the tender specification, investigation into low carbon/climate aligned investment options, and incorporate outcomes within specification.	Scope 3 – Investments
		University to have engaged with fund managers on specific stocks once per year.	No. of engagements via fund managers.	Work with appointed fund managers to actively engage with high emitting companies within the University's investment portfolio with a view to influencing policy.	
		Policy to be approved by Jan 21.	Formal publishing and implementation of the policy.	Review and amend Socially Responsible Investment Policy to ensure that it aligns with sustainability objectives, and reflects the University's net zero aims.	

7 CIRCULAR ECONOMY

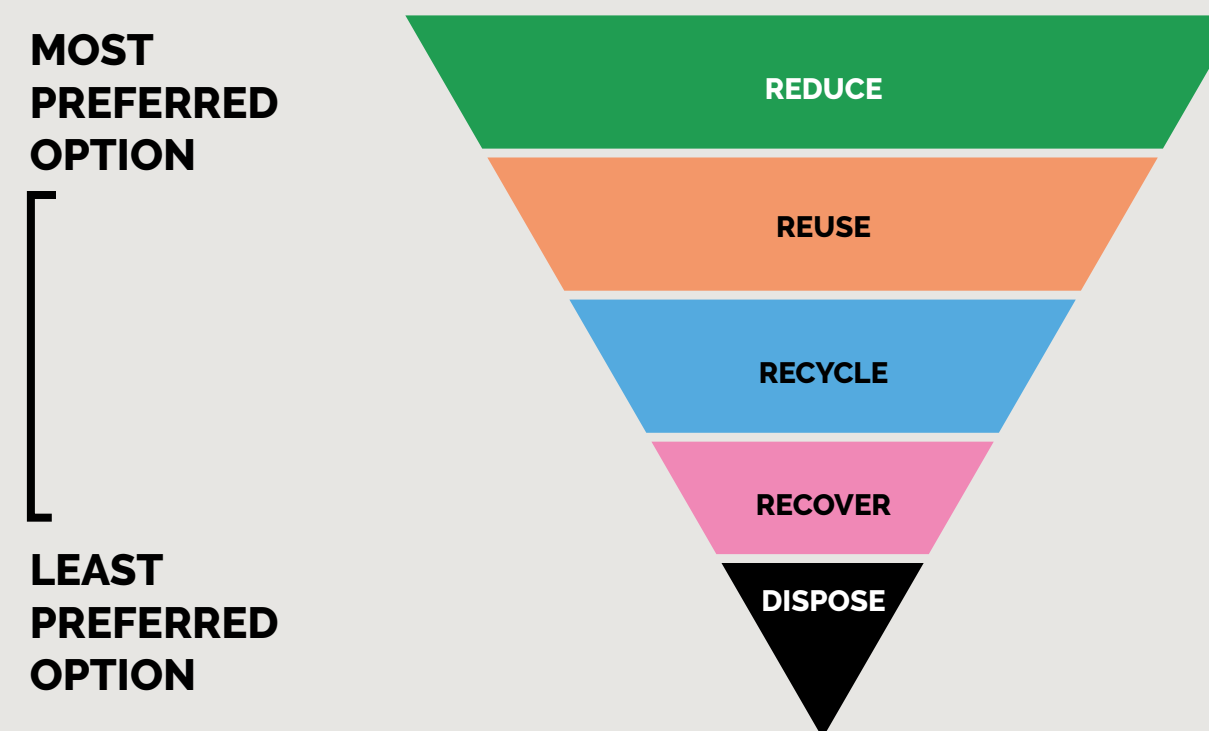


Emissions directly associated with the treatment of waste forms the smallest contingent of the University's scope 3 emissions footprint (<1%), however one of the largest sources of emissions is from purchased goods and services. By embedding Circular Economy (CE) principles and designing out waste/pollution by keeping products and materials in use, the University's Waste Management Strategy can dramatically reduce emissions associated with the manufacture and purchasing of goods, as well as the direct emissions from the treatment of waste.

The Circular Economy has the Waste Hierarchy principles at its core: reduce production to a bare minimum, maximise reuse and, if waste is unavoidable, recycle or recover components wherever possible. Our strategy will build on work already completed around sustainable waste management and align processes further with the Waste Hierarchy:

FIGURE 6

The waste hierarchy of most to least preferred waste management actions



To imbed CE the University must decouple waste generation from organisational growth and implement suitable targets to achieve this. By merely aiming to reduce waste mass per FTE colleague or student, the University may continue to consume ever greater amounts of natural resources and produce ever growing volumes of waste. We must aim to reduce the total volume of waste produced year on year regardless of how many colleagues and students we have.

One example of where a CE approach has already been utilised is through the re-use of furniture within the University. The impact of the disposal of furniture may not be hugely significant for the University's carbon footprint, however the reuse of items eliminates the need for new products that would require significant inputs of energy and raw materials to produce.

The manner of monitoring and measuring the types and volume of waste produced by the University will be improved in order to produce a baseline by which improvements in performance can be measured. Furthermore, additional in-depth analysis of waste streams will allow identification of materials that can be moved further up the waste hierarchy. We will monitor waste using a weight-based metric as well as assessing waste through impact-based reporting, focusing initially on carbon accounting.

The technologies and processes employed by the Waste Processing Sector has a significant impact on how the University's waste is handled and processed. Low recyclate prices, a lack of national infrastructure to treat waste within the UK, potential disruption to Refuse Derived Fuel (RDF) exports post-Brexit, and the unproven nature of new technologies within the sector all adds complexity and uncertainty. It must be recognised that there are currently significant barriers to accurate carbon accounting of waste, for example, due to processing restrictions recyclables from the University are largely collected as Dry Mixed Recycling and not individual fractions (eg plastics, paper, metal). The mixed collection of such material does not allow for a nuanced approach in accounting for the carbon from different waste streams.

We will continue to work with our contractors to identify alternative methods of waste analysis that allow us to effectively target the most polluting types of waste. For example, some lightweight materials, like plastics, have large environmental impacts where as some heavy materials, for example, aggregates have smaller environmental impacts.

7 CIRCULAR ECONOMY

	OBJECTIVE	TARGET	KPI	ACTION	EMISSIONS SOURCE	
PHASE 1	Work with colleagues, students and stakeholders to decouple growth from material input and waste generation i.e. continue to grow in size while reducing the total volume of waste produced.	5% reduction in total waste mass (tonnes, excluding construction waste) by the end of Phase 1, against a 2018-19 baseline.	% reduction in total waste mass.	Engage with staff and students to identify areas where waste generation can be minimised.	Scope 3 – Waste: Anaerobic Digestion	
				Engage with suppliers across the procurement to identify methods of reducing waste/take back schemes/ensuring items have the potential to be repaired rather than replaced.	Scope 3 – Waste: Incinerated Scope 3 – Waste: Landfilled Scope 3 – Waste: Recycled Scope 3 – Waste: Energy Recovery	
	Work with colleagues, students and other stakeholders to move waste up the waste hierarchy, ensuring products are reused wherever possible or sent for recycling or recovery as a minimum	Achieve an onsite recycling rate of 60% from general non-hazardous waste by 2023-24.	% onsite recycling rate (general non-hazardous waste).	Zero non-hazardous waste to landfill by the end of Phase 1.	Complete a tender exercise for non-hazardous laboratory waste that results in this material going to EfW.	Scope 3 – Waste: Landfilled
				Continue to engage with waste contractors to ensure waste destinations are regularly reported and include zero waste to landfill commitment within future non-hazardous waste tenders.	Scope 3 – Waste: Anaerobic digestion	
				Design new recycling posters and promotional material.	Scope 3 – Waste: Landfilled	
				Undertake a recycling campaign across campus to reinvigorate recycling and educate colleagues and students on what can be recycled.	Scope 3 – Waste: Recycled Scope 3 – Waste: Energy Recovery	

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7 CIRCULAR ECONOMY

	OBJECTIVE	TARGET	KPI	ACTION	EMISSIONS SOURCE
PHASE 1	Work with colleagues, students and other stakeholders to move waste up the waste hierarchy, ensuring products are reused wherever possible or sent for recycling or recovery as a minimum.	Introduce food waste segregation across all University managed accommodation.	% of Halls with food segregation.	Introduce food waste segregation into Halls of Residence.	Scope 3 – Waste: Anaerobic Digestion
				Undertake a campaign across campus to educate colleagues and students on what can be placed in the food waste bins.	
		Fully capture waste generation from Capital and Improvements projects including type, quantity and treatment, by the end of Phase 1.	100% all projects reporting on actual waste production.	Develop and implement a method to capture waste generated from Capital and Improvements jobs.	Scope 3 – Waste: Incinerated
				Develop framework to ensure contractors maximise application of the waste hierarchy in this setting.	Scope 3 – Waste: Landfilled Scope 3 – Waste: Recycled Scope 3 – Waste: Energy Recovery
		Increase the percentage of furniture, lab equipment & electrical equipment reused (both onsite and offsite).	% of material reused.	Establish process to monitor and record furniture and equipment reuse.	Scope 3 – Waste: Energy Recovery
				Collate and review data in order to set an appropriate target to improve ongoing performance in the 2021-22 academic year.	

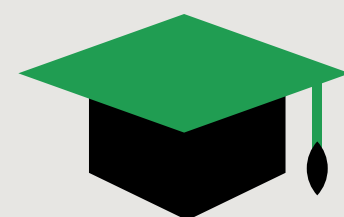
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7 CIRCULAR ECONOMY

	OBJECTIVE	TARGET	KPI	ACTION	EMISSIONS SOURCE
PHASE 1	Work with colleagues, students and other stakeholders to move waste up the waste hierarchy, ensuring products are reused wherever possible or sent for recycling or recovery as a minimum	Increase the percentage of furniture, lab equipment & electrical equipment reused (both onsite and offsite) (baseline to be established).	% of material reused.	<p>Work with Improvements Team to ensure all University Space and Project Requests (SPRs) include an assessment of current furniture and the send for reuse / reuse as items prior to disposal as possible.</p> <p>Identify action plan for maximising reuse of resources within the University.</p>	Scope 3 – Waste: Energy Recovery
	Develop and implement a resource management plan.	Publish Resource Management plan by June 2021.	Publication of Resource Management plan.		<p>Scope 3 – Waste: Anaerobic Digestion</p> <p>Scope 3 – Waste: Incinerated</p> <p>Scope 3 – Waste: Landfilled</p> <p>Scope 3 – Waste: Recycled</p> <p>Scope 3 – Waste: Energy Recovery</p>

8

RESEARCH AND EDUCATION



Newcastle University is a research-intensive, HE institution where education and research are at the core of our organisational purpose, and constitute two of four of our fundamental strategies.³¹ Organisationally, the University is formed of three academic faculties: the Faculty of Medical Sciences (FMS), the Faculty of Science, Agriculture and Engineering (SAGe), and the Faculty of Humanities and Social Sciences (HaSS), each of these with their own individual schools, groups, centres and institutions. Alongside the three faculties we employ a multi-disciplinary Professional Services (PS) section which support the academic faculties, as well as manage individual, specialised departments eg Estates, NUIT, People Services, etc.

Currently there are over 20 part-time and full-time undergraduate, postgraduate research and PhD programmes that are available within the realm of environmental sustainability, and 100+ compulsory or optional modules for students to explore. These opportunities however are exclusively within the SAGe faculty and are not yet accessible to FMS or HaSS. One of our primary objectives on this will be to expand our sustainability education universally across all our faculties. On top of this we are aiming to build our suite of extra-curricular activities available to students including placements and internships.

A key research-based objective of ours is to cultivate a 'Living-Lab' approach to our on-site actions whereby we combine the expertise of our academic and professional bodies and exercise our own estate as a test bed for innovation. This will provide research opportunities for our colleagues and students, and improve on collaborative working between our academic and professional services.

We are also acutely aware that our teaching and research has a reach beyond the boundaries of our organisation. One of our objectives is to develop a greater understanding of our research projects on society and measuring our impact by mapping these across the UN SDGs.



Currently there are over 20 part-time and full-time UG, PGR and PhD programmes that are available within the realm of environmental sustainability, and 100+ compulsory or optional modules for students to explore.

8 RESEARCH AND EDUCATION

	OBJECTIVE	TARGET	KPI	ACTION	EMISSIONS SOURCE
PHASE 1	Expand on our existing education for sustainability across taught programmes.	TBC		Conduct in-depth review of sustainability content across non-sustainability-related courses.	All
				Host sustainability in the curriculum workshop(s).	
	Develop a 'Living Lab' process to identify opportunities for applied research on the estate.	Initiate one energy-related, 'Living Lab' project on the University estate, by the end of Phase 1.		Establish a University 'Living Lab' working group combining academic and professional services colleagues.	All
				Complete initial campus feasibility assessment and pipeline project ideas eg flexible energy systems utilising the University's own High Voltage electricity distribution system.	
				Develop pilot project, allocate required resources, and commence on-site works.	
	Understand the contribution our sustainability research has on society.	Assess number of research projects linked to SDGs by July 2021.		Develop process for and reporting mechanism for mapping contributions to SDGs across the research output.	All
Complete the annual SDG Accord report.					

9

LEADERSHIP AND GOVERNANCE



Newcastle University is governed by a series of five committees, or statutory bodies, with the 'day-to-day' management of the organisation conducted by our University Executive Board (UEB).³²

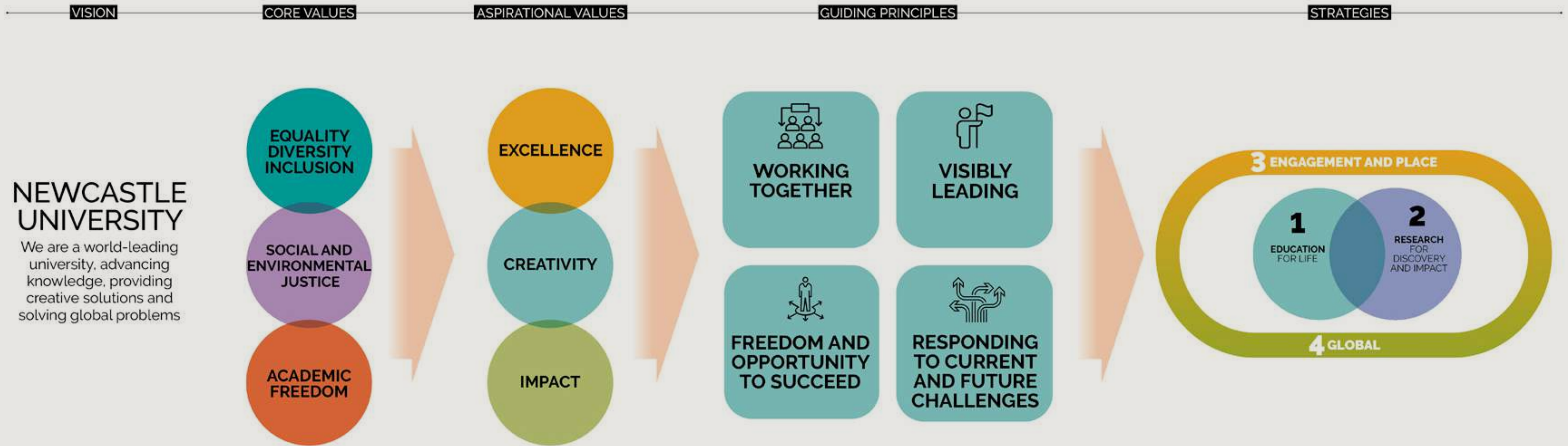
In environmental and sustainability-related matters, our Environment and Sustainability Committee act as Management Review for our EMS and EnMS, as well as overseeing all other operations across this area. We also have our UNSDG Committee in place to facilitate the University's approach and strategy in applying the UNSDGs at our institution.³³

Environmental Sustainability currently acts as one of six 'Strategic Enablers' within the University's Vision and Strategy. Due to the scale of the climate crisis, to deliver on the UNSDGs, and to address social and environmental justice concerns. As of October 2020, 'Social and Environmental Justice' has been added as a 'Core Value' within our Vision and Strategy, representing our commitment to stewardship of the planet's resources for existing and future generations. It is important to us as an organisation that we live by these values and in doing so embed them within all aspects of University's strategy and decision making.

To be a visibly leading organisation is another of our guiding principles and this applies to our work across the sustainability sector and in response to the climate crisis. In this vein, we will look to actively participate in the most recognised sustainability metrics and demonstrate leadership amongst the HE sector and beyond, providing support to others where we are able.



NEWCASTLE UNIVERSITY VISION AND STRATEGY



9 LEADERSHIP AND GOVERNANCE

	OBJECTIVE	TARGET	KPI	ACTION	EMISSIONS SOURCE
PHASE 1	Participate in recognised sustainability metrics and awards to demonstrate leading practice.	Maintain position in top 5% of participants within the Times Higher SDG Impact Ranking.	THE SDG Impact Ranking position.	Review THE SDG Impact Ranking criteria to establish opportunities for further improvement.	All
		Maintain 'First Class' ranking within the People & Planet University Sustainability Leaderboard.	People & Planet position.	Review and update our sustainability information eg Sustainable Campus webpages (where required) for People & Planet University League.	All
	Provide leadership and support to other organisations.	Release Sustainability Construction Framework Guidance document by the end of 2019-20 year.		Complete and publish Sustainability Framework for Construction Projects.	Scope 1 – Natural Gas (Heating) Scope 1 – Gas Oil (Heating) Scope 1 – Burning Oil (Heating) Scope 1 – Liquefied Petroleum Gas (Lpg) (Heating) Scope 2 – Grid-Supplied Electricity Scope 2 – Steam (Or Heat) Scope 3 – Fuel and Energy-Related Activities Scope 3 – Capital Goods (Construction)

10

ENGAGEMENT



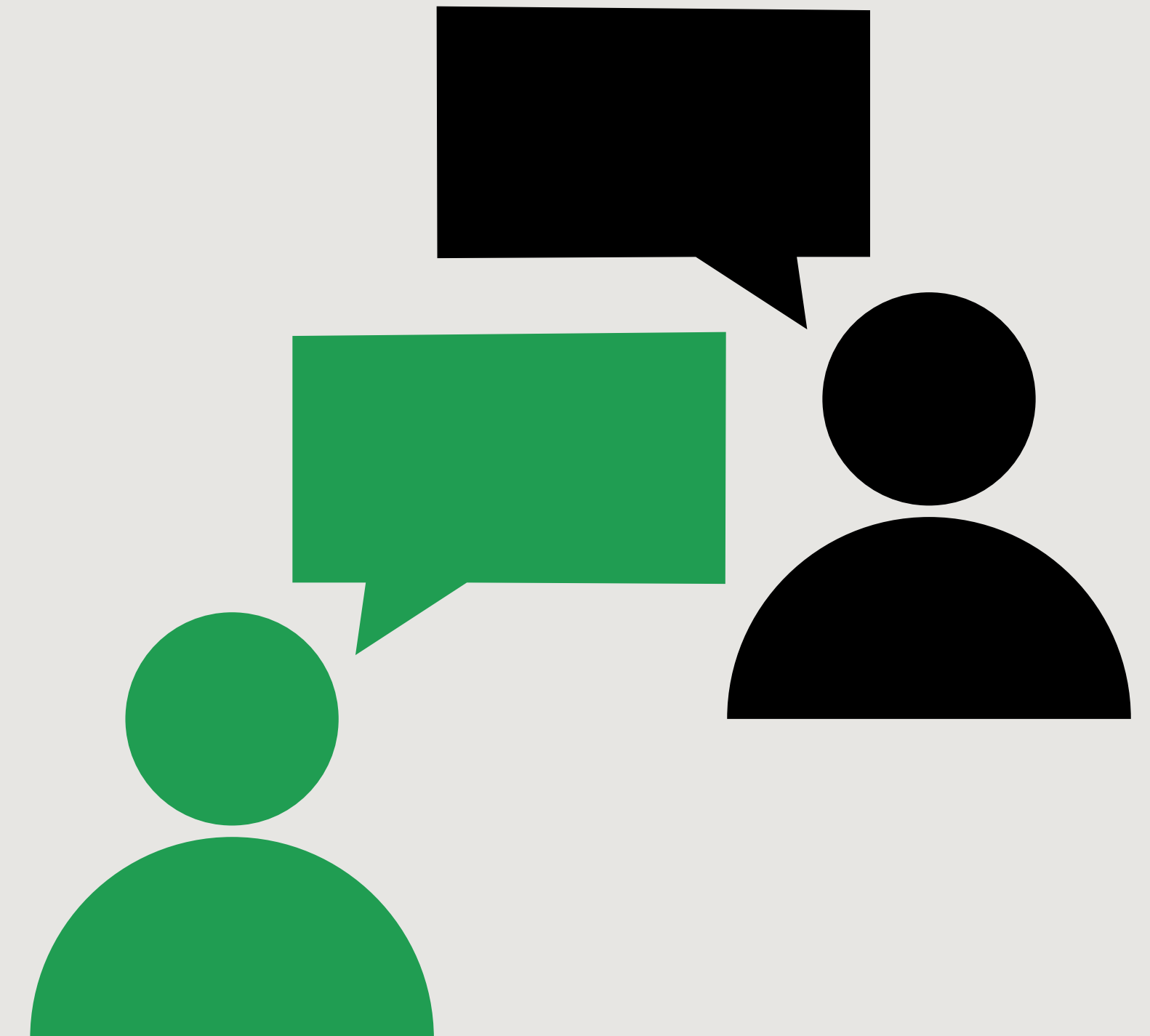
The final stage of our 10-point plan is to ensure effective, transparent and consistent engagement with both internal and external stakeholders.

In the fight against the climate crisis, everybody is a stakeholder; it is impossible for us to meet our net-zero and other carbon targets without the efforts of all colleagues and students, and assistance from partners outside of our institution.

Internally, over the last decade we have operated numerous colleague and student engagement programmes, the latest of which being 'Action 2020', our colleague-focused action framework. We also continue to host our 'Environment Awards' as part of our 'Celebrating Success' events throughout the year to recognise and reward the achievements of our colleagues and students.

Externally, we engage with bodies including local authorities, the general public and other commercial and research partners across the globe to succeed in our aspirations laid out within our Vision and Strategy. In terms of climate action, as mentioned in the 'Background' section of this report we maintain a presence on the City Council's NZTF and other working sub-groups to aid the city in its approach to Newcastle's net-zero carbon target. We also work closely with our public sector neighbours in the Newcastle Hospitals NHS Trust and Northumbria University to share best practice and experiences in search of our common goals.

Our **Engagement Plan** will describe our goals, targets and content for fostering lasting culture change by empowering our colleagues and students, and communicating with our external stakeholders. Engaging connections with our community are needed on an ongoing basis to support all our efforts, not just in reducing carbon emissions, but all aspects of our work towards living our environmental justice values and sustainability objectives.



10 **ENGAGEMENT**

	OBJECTIVE	TARGET	KPI	ACTION	EMISSIONS SOURCE	
PHASE 1	Increase extra-curricular opportunities to educate students on sustainability and the climate crisis.	Commence new engagement programmes within University halls by July 2021.	No. of programmes/opportunities.	Development and implementation of ResAction curriculum for educating students on sustainability within halls of residence.	All	
		Establishment of a new Student Sustainability Committee to provide opportunities for more students to engage, by July 2021.				All
	Improve colleagues engagement and awareness around sustainability and the Climate Crisis.	Relaunch of colleagues sustainability network, by July 2021.				All
		Hold annual celebrating success event to solely recognise contributions from Action 2020 and beyond, the first event to take place before July 2021.				All
		Complete pilot year of the Laboratory Efficiency Assessment Framework (LEAF) scheme, by the end of Phase 1.				Scope 1 – All
						Scope 2 – All
				Scope 3 – Purchased Goods and Services		
				Scope 3 – Fuel and Energy-Related Activities		
				Scope 3 – Waste Generated in Operations		
				Scope 3 – Water Supply and Wastewater Treatment		

Continued on next page...

10 **ENGAGEMENT**

	OBJECTIVE	TARGET	KPI	ACTION	EMISSIONS SOURCE
PHASE 1	Develop and establish communication routes for raising awareness amongst colleagues, students and other interested parties.	Deliver new sustainability induction information at colleagues welcome events and student induction during the 2021-22 academic year.		Develop process for and reporting mechanism for mapping contributions to SDGs across the research output.	All
		Create and publish joint landing page for sustainability content within University website, by July 2021.			All
		Publish new annual sustainability report, by July 2021.		Develop an annual sustainability report.	All
		Publish new sustainability engagement and communication plan, by July 2021.		Construct an engagement and communication plan for the dissemination of sustainability and climate related activity.	All

This report represents the commencement of our five-phase approach to meeting our carbon targets and combating the climate crisis.

Within the first year of each phase we will re-introduce the present context of the climate crisis at national, regional and University levels, with each subsequent annual report within the phase providing an update on our emissions performance and status of action plans. Objectives, targets, and actions may change year on year dependant on the availability of new information, technology and our recorded performance.

The road to net zero and achieving the aims of the UN Paris Agreement may appear a long one, but these first steps are crucial and firm action is needed from the outset as societies and the natural world experience increasingly frequent and ever more severe consequences of climate change. The rate of behavioural and system change that can be sustained as shown by the response to the COVID-19 pandemic proves that with communal, coordinated action we have the ability to make the 'unprecedented transitions' needed to rebuild a better planet for future generations and the natural world to thrive.

Every single one of us has the power to make a significant positive change, and together we can accomplish what we have set out to in this plan – please join us on this journey.

To get involved or offer suggestions for our Climate Action Plan, please get in touch with our University Sustainability Team at sustainable-campus@newcastle.ac.uk, or visit <https://www.ncl.ac.uk/sustainable-campus/>.

CONCLUSIONS

AND NEXT

STEPS

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