

**Subject:** GB10 Pledges on the Environment Update 2022

**Date of meeting:** 18<sup>th</sup> October 2022

**Report of:** Chair, Greater Brighton Programme Board

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**LA(s) affected:** All

### For general release

#### 1. Purpose of the report and policy context

- 1.1 The Greater Brighton Economic Board ('the Board') oversaw the development of 10 Pledges on the Environment, which all Board members signed up to in October 2020. It was agreed at the October 2020 meeting to report back on progress annually.
- 1.2 An update was presented to the Board in October 2021 and this paper is therefore the second annual update. **Appendix 1** provides more detail on each Pledge, and **Appendices 2 and 3** provide a list of relevant research in the University of Sussex and University of Brighton.
- 1.3 The Pledges form the background to the Board's development of a Blue/Green Investment Plan. They contribute to demonstrating that the Greater Brighton area can be an exemplar to government about how to decarbonise a small city, rural communities, and coastal areas.

#### 2. Recommendations

- 2.1 That the Board notes the progress demonstrated on the 10 Pledges on the Environment since October 2021.
- 2.2 That the Board supports the actions needed to take the Pledges forward in the next year to October 2023.
- 2.3 That the Board agrees that the GB10 pledges work and monitoring progress should be included in the Transition to Net Zero Action plan (agreed at the July 2022 meeting).

#### 3. Context and background information

- 3.1 The Greater Brighton Economic Board oversaw development of the [GB10 Pledges on the environment](#) that sit above the Greater Brighton Energy and Water plans previously adopted in 2019. These 10 environmental pledges are

approved actions agreed and ratified by the Board in October 2020. The Pledges are a promotional tool which is used to push forward the city region's work towards a post carbon economy through a variety of channels. When they were agreed in 2020, the Board asked to be updated on their progress annually, and this update follows the first in October 2021.

- 3.2 At the October 2021 Board Meeting, some of the key successes that were highlighted relating to progress on the GB10 included;
- Sussex Kelp Restoration Project and development of the Sussex Bay initiative to restore nature and enhance the potential of marine and coastal environments to deliver carbon sequestration, biodiversity and other public benefits.
  - Joint working on high-profile infrastructure including Hydrogen Sussex and the Housing Retrofit Task Force.
  - Members in an improved position to bid for national funding on public sector decarbonisation.
  - Delivery of the first school raingarden at Moulsecoomb Primary school through The Aquifer Partnership's 'Rainscape Campaign'.
  - South Downs National Park Authority launching 'ReNature' nature recovery campaign.
  - Adaptive work by water companies to deliver water efficiency messages during Covid when home visits were not possible.
- 3.3 Over the last 12 months, the need to tackle climate change by moving towards net zero has become even more urgent. The record-breaking temperatures and other extreme weather conditions experienced in the UK and Europe during the summer, provide a stark reminder of the need to transition to net zero in the fastest time possible. In addition, the spiralling costs of many commodities, particularly energy, fuel and food, have been driving the highest inflation rates witnessed in a generation. Interest rate rises and economic uncertainty have followed, and a cost-of-living crisis is taking hold.
- 3.4 The incoming Chair for 2022/23 has put transitioning to net zero front and centre of the Board's ambitions. A recent session for Board Members to review current and future priorities reinforced this ambition as a key priority for the Board. There is a desire and need to move ahead at pace.
- 3.5 The Greater Brighton Energy Plan identifies proposals to accelerate the delivery of energy projects that will boost resilience and security and at the same time help reduce carbon emissions to zero. This makes the important work of the Energy Plan even more crucial than ever as many of the interventions will also help tackle the burden of rising prices. For example, retrofitting will help decarbonise homes by reducing energy usage, but that will also drive down energy bills.
- 3.6 The Water Plan builds on work around the water environment that is already in progress across a number of organisations to set out opportunities to address ongoing challenges in new, innovative ways, yielding much increased benefits

for the local area, compared to current, 'conventional' approaches. The intention is to move new building development towards 'water neutrality', which is particularly crucial in Crawley given the constraints around water.

3.7 During 2021/22 the Board's commitment to transitioning to a net zero carbon region has helped to drive solid progress on:

- Significant increase in partnership working on green spaces projects and strategic preparation for local leadership on Nature Recovery Networks
- Homes Retrofit Task Force engagement with local authorities and supply chain to develop analysis of social housing stock types, impact and cost of decarbonisation measures.
- Rapid progress on installing electric vehicle charge points and fleet decarbonisation in all areas.
- Securing funding for the Waterhall wilding project.

3.8 The above shows the great progress being made by Greater Brighton local authorities and other partners, but it is important that the Board follows up on previous commitments to transition to a low carbon economy. Substantive next steps are being progressed including:

- **Homes Retrofit Task Force** – social housing providers working together to develop archetypes, aggregate and drive forward efficiencies in improving social housing energy efficiency
- **Sussex Kelp Restoration Project** – focus on science and evidence for benefits for carbon and biodiversity.
- **Hydrogen Sussex** – developing a Hydrogen strategy for Greater Brighton and the wider Sussex area to promote and support a hydrogen economy (by February 2023).
- **Net Zero Fleets** – reviewing what can be done together to accelerate the switch from diesel/petrol vehicles to alternative fuels.
- **Local Nature Recovery Strategies** – champion the creation and delivery of the new Local Nature Recovery Strategies for Sussex through the delivery of robust local plan policies that support nature recovery
- **Food** – taking forward the regional food strategy to ensure the supply of food is secure, sustainable and affordable
- **Lobbying** Greater Brighton lobbying to enable and facilitate the environmental pledges:
  - Have written to last two Secretaries of State for Levelling-up, Housing and Local Communities articulating GBEB aspirations and action on the ground, particularly around net zero.
  - Engage with local MPs, specifically on the emerging Hydrogen Strategy to promote the city region as a hydrogen hub.

3.9 The GB10 Pledges have been a very helpful communications tool, as they are easy to understand and progress/successes relating to each pledge can be readily transmitted to a wide audience. This will continue to be the case. However, the increased urgency and need to move ahead at pace, as outlined

in 3.3-3.4, require a more robust method of monitoring progress towards achieving net zero. There is a need to set clear targets/outcomes, milestones and timescales and to monitor progress against agreed parameters. Recommendation 2.3 proposes that this should fall under the Transition to Net Zero Action Plan, which is still under development having been agreed at the July Board meeting.

#### **4. Analysis and consideration of alternative options**

- 4.1 The 10 Pledges have formed an excellent platform for joint work between Greater Brighton members. The next steps highlighted in paragraph 3.8 outline a range of practical actions that Board members individually and together are going to be taking forward over the next 12 months.

#### **5. Community engagement and consultation**

- 5.1 Where community engagement and consultation is required for individual projects, this is being done by project owners.

#### **6. Conclusion**

- 6.1 The 10 Pledges on the Environment have supported Board members in carrying forward their own actions and targets on climate change. Progress also demonstrates that Greater Brighton is developing leadership and capacity on a range of climate actions.

#### **7. Financial implications**

- 7.1 There are no direct financial implications resulting from this report. Members of the Board are carrying forward their own actions and targets on climate change. Progress also demonstrates that Greater Brighton is developing leadership and capacity on a range of climate actions. The Board will continue to explore funding options to support the 10 Pledges on the Environment in particular opportunities for support through the national funding on public sector decarbonisation.

Name of finance officer consulted: Rob Allen, Principal Accountant  
Date consulted 06/10/22:

#### **8. Legal implications**

- 8.1 There are no legal implications arising directly from this report.

Name of lawyer consulted: Wendy McRae-Smith  
Date consulted: 06/10/22

#### **9. Equalities implications**

- 9.1 The projects that will deliver on the commitment of the GB10 pledges will ensure the benefits are shared across the City Region. In addition, one of the ongoing aims of the work is to address inequalities by looking at how, for example, access to energy and water can be made affordable for all Greater Brighton residents. Work around decarbonising homes and building resilience in energy supply will help to tackle fuel poverty.

## **10. Sustainability implications**

- 10.1 The driving force behind the GB10 pledges is to help Greater Brighton to transition towards net zero. The various projects that underpin the GB10 will help to protect the environment, enhance natural capital, limit the effects of climate change, and build resilience in key infrastructure and the supply of energy and food.

## **SUPPORTING DOCUMENTATION**

### **Appendices:**

1. 10 Pledges on the Environment – Update October 2022
2. Developing new solutions for tackling climate change: some examples from University of Sussex
3. Key projects from University of Brighton aligning with GB pledges

## APPENDIX 1 - 10 Pledges on the Environment – Update October 2022

### 1. **Kelp:** backing a scheme to introduce a carbon capturing kelp forest off the Sussex coast

Key achievements	<p>Sussex Kelp Recovery Project champions first year of ecological research and benchmarking in line with the UN decade for Ecosystem restoration timeline and IUCN standards.</p> <p>Sussex Kelp recovery stays high on local and national agenda – presenting at COP26.</p> <p>Anecdotal changes taking place on the Sussex seabed showing that ecological succession is starting to take place.</p> <p>Sussex Bay Project moving at pace with a focus on mechanisms for delivering blended finance into the Sussex marine recovery sector.</p> <p>Sussex marine recovery stakeholders engaged with developing clearer plans on how everyone works together going forward.</p>
Next steps	<ul style="list-style-type: none"> <li>➤ The Board to note the natural recovery process of the Sussex Kelp, and to note that we are still early in the journey.</li> <li>➤ Sussex and national organisations and individuals working together to shared ambition of ecosystem recovery.</li> </ul>

### 2. **Water Recycling:** partnering projects to introduce recycled water into new homes

Key Achievements	<p>The draft South-East Water Resources Management Plan (WRMP), as well as South East Water and Southern Water WRMPs should be published in November and are expected to feature the Peacehaven water recycling scheme in some future scenarios, but currently no earlier than the 2060s.</p> <p>Most of Crawley and small sections of Mid Sussex and Adur are affected by new <a href="#">water neutrality obligations</a> linked to the wider impact of water abstraction on sites protected for their nature conservation interests in the Arun Valley. Any new development applying for Planning Permission is required to demonstrate the site is Water Neutral by reducing consumption, reusing water (e.g. rainwater harvesting or greywater recycling), then offsetting the remaining balance of additional demand (e.g. retrofitting water efficient technologies or reuse options in existing properties).</p>
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UoS	The Jubilee building has rainwater harvesting, and grey water recycling equipment has been installed in the East Slope halls of residence development, with a target of 30% of used water from showers being redirected to toilet flush systems. The grey water is currently being supplied to 1,434 student bedrooms.
Southern Water	Outside of the areas affected by water neutrality, a slightly more flexible approach to water neutral development can be taken (see the <a href="#">Waterwise guidance</a> ). LPAs can achieve this by strengthening planning policy, or through direct engagement with developers working in partnership with Southern Water as part of the T100 programme. This would potentially be able to move forward more rapidly with initiatives and may be able to make use of the proposed Developer Incentives which Southern Water will be consulting on shortly.

### 3. Zero Emission Fleets: committing to phasing out diesel cars, refuse trucks, vans

Arun DC	Arun District Council is working to transition its vehicle fleet to electric vehicles. ADC currently has a fleet of 16 vehicles. 14 are expected to be replaced by full electric vehicles over the next twelve months, whilst two will remain diesel fuelled. As technology evolves and suitable vehicles become available the remaining diesel vehicles will be replaced by fully electric ones.
Adur & Worthing Councils	AWC are purchasing its first all-electric waste disposal trucks with five 3.5-tonne vehicles recently ordered. A wider fleet decarbonisation strategy is due to be commissioned.
BHCC	<p>BHCC has over 500 cars and vans, and 56 trucks/HGVs – a mix of leased and owned vehicles. In March 2022, work commenced to increase the electrical power intake to the fleet depot and a new electricity sub-station was installed to accommodate extra charging points for the fleet. The depot will have one rapid charger, 11 HGV charging points and 24 small vehicle charging points. Currently 9% of the vehicles are electric and 32% hybrid. The council has two EV HGV's ready for delivery and five on order for delivery over the next 18 months.</p> <p>The Fleet team have pushed manufacturers into bringing innovations into EV trucks in production, such as side loading and top loading RCVs. The first truck was converted from our existing fleet of diesel to electric this year. Eleven new EV vans will replace existing diesel and six new EV cars are due to arrive in the next two months.</p>
Crawley BC	A Fleet Replacement Strategy is being developed to transition to low carbon or active transport options for the complete fleet by 2030.

Lewes-Eastbourne	Pathway to 2030 prepared and agreed by Cabinet June 2022- Dedicated EV food waste fleet being procured for 2023 with street cleansing to follow in 25/26. Renewable diesel being purchased from April 2023 (up to 90% emission saving at tailpipe)
Mid Sussex	Provided electric vehicle charging points at Council offices and electric bikes for staff. Upgrading the parking enforcement fleet with electric vehicles.
UoS	The University's <a href="#">Sustainability Strategy</a> contains a commitment to "make all of the University's vehicle fleet ultra-low emissions by 2025 by only procuring and leasing new vehicles that are ULEVs"
Southern Water	Net Zero Plan pledges to transform company vehicles by electrifying the fleet or introducing alternative low carbon fuels by 2030.

**4. EV Charging Points:** supporting a huge increase in electric vehicle charging points.

WSSC, Districts & Boroughs	West Sussex County Council and 6 District and Borough Councils, in August 2021 awarded a contract with a company to install, operate and maintain a West Sussex county-wide EV Charge Point network. Charge points have now started to be installed on streets and council car parks in all areas of West Sussex, including Arun, Adur, Crawley, Mid Sussex, and Worthing.
Arun	ADC is part of the west Sussex Chargepoint network. Between October & December 2022 42-50 should be installed within ADC owned car parks in LA, BR & Arundel. From November 22 – March 23 there should be 30 on-street EVCPs installed, subject to West Sussex Highways approval. Funding application is underway for EP Village Green & Aldingbourne Community Centre sites (6 plugs on each site). Site selection will start for phase 2 on council owned car parks shortly.



BHCC	<p>Over 300 public electric vehicle charge points have been installed throughout Brighton and Hove. These include lamppost, fast and rapid chargers so that every resident in the region is within a convenient distance from an energy source for their electric vehicle by 2030.</p> <p>BHCC also has a rolling programme to convert bays for the use of electric vehicle charging only, to improve access. This network is essential in giving residents confidence that support is in place to power low-carbon vehicles.</p> <p>The council is working through the planning process to ensure all new homes have access to EV charge points and on-street EV charging is rolled out along key transport corridors and residential areas with no off-street parking.</p> <p>The Council is also working to identify land suitable for a rapid charging station close to the A27.</p>
Crawley BC	<p>EV chargers are being rolled out across residential areas of the borough as part of the West Sussex contract with Connected Kerb, aimed at enabling residents without off-street parking to switch to EVs.</p> <p>A specific commitment is included in Crawley's new Local Plan which requires new development to meet the anticipated demand for Electrical Vehicle (EV) Charging Infrastructure. Provision of EV charging infrastructure in Crawley is further supported by West Sussex County Council's 2019 'Guidance on Parking in New Developments'.</p>
Lewes-Eastbourne	<p>Supplier due to be announced- surveys already underway – anticipating around 60 EVCPs to be installed over next 6 months.</p>
Mid-Sussex	<p>Mid Sussex District Council is a partner of the West Sussex ChargePoint Network. To date 52 EV charging points have been installed in 9 council owned car parks. Installation of 14 EV charging points is in progress for a further 2 car parks. 60 on-street EV charging points are planned for 10 residential locations with installation expected to start later in 2022.</p> <p>The 3,500 new homes in Brookleigh (formerly known as Northern Arc) must provide EV charging points for each on-site parking space for residential dwellings. For the remainder, a minimum provision of at least 1 EV rapid charging point per 10 residential dwellings and / or 1,000m<sup>2</sup> of commercial floor space.</p>
UoB	<p>Rollout of electric vehicle charge points (EVCPs) has gone from strength to strength, increasing from eight to 63 in one year, following 55 new charge-points now installed at our Moulsecoomb campus multi-story car park.</p>

	The regeneration of the Moulsecocomb area through the £300m Big Build programme has enabled a redesign of the community streetscape to promote and prioritise active travel by foot and by bike.
UoS	Sustainability <a href="#">strategy</a> commits the University to “begin to invest in replacing priority fossil fuel dependent infrastructure with lower carbon alternatives by December 2026, with a first step of producing feasibility studies in a number of areas including upgrading electric vehicle, scooter and bike charging infrastructure.”

5. **Rewilding:** supporting an increase in natural landscapes and rain garden projects

Key achievements	<p>East Sussex County Council (ESCC) and West Sussex County Council (WSCC) have been informed by Defra that they are likely to be appointed as Responsible Authorities for preparation of <a href="#">Local Nature Recovery Strategies</a> (LNRS) as per the Environment Act 2021. Each will prepare a strategy - with the area of Brighton and Hove included within the LNRS for East Sussex. The purpose of these is to identify (and map) priorities and spatial opportunities for nature’s recovery across their geographies to create a nature recovery network.</p> <p>In preparation for this new role, ESCC and WSCC have created a ‘proto-board’ which also includes BHCC - to oversee deployment of these new statutory responsibilities and to formalise a commitment across the three Tier 1 authorities to work closely together in preparation of these strategies at a pan-Sussex scale.</p> <p>The Aquifer partnership’s Rainscape Campaign – Wild Park (Moulsecocomb) rainscape has secured funding and is underway.</p>
UoS	The University hosted a <a href="#">Big Biodiversity Conversation</a> throughout 2022. They have mapped biodiversity and established that 38% of the campus is already set aside for nature. Plan to launch an internal consultation on increasing the percentage of land set aside for nature – including passive rewilding – to 40, 45 or 50% of campus land set aside for nature. £20k pot created for practical staff and student led biodiversity projects on campus and have a biodiversity strategy and draft <a href="#">policy</a> which includes a commitment to biodiversity net gain.
Southern Water	Developed a desktop baseline of biodiversity value of own estate and identified opportunities to deliver BNG and carbon offsetting. This is being used to inform a BNG and offsetting strategy (focussed on delivering nature uplift across the estate).

	Environmental champions scheme launched internally with funding for operational staff to undertake small scale site improvements.
BHCC	Countryside Stewardship and Heritage Lottery Fund monies for Waterhall wilding site secured. Conservation grazing introduced using novel GPS technology. Education ranger recruited and in place. Site designated as public open access. Next steps are to complete designation as a Local Nature Reserve, set up school visits, and install waymarked trails to guide the public around site.
BHCC, SDNPA, Southern Water, Environment Agency	<a href="#">The Aquifer Partnership</a> (TAP) has secured funding for Wild Park 'Rainscape' project – this will create several shallow planted basins which can hold water during heavy rainfall, it will help to reduce pollution and improve the area for people and nature. Large scale consultation and community engagement on the scheme is underway. TAP has also launched a Rain Garden Campaign "Slow it Down, Soak it Up" on World Water Day 2022 – 3yr campaign designed to encourage as many rain gardens as possible in the TAP area – involving training, awareness-raising and developing guidance, case studies and community rain garden networks over a three-year period.
BHCC, Lewes & Eastbourne Councils, SDNPA, National Trust, Biosphere	<a href="#">Changing Chalk</a> is a partnership of 10 organisations aimed at connecting nature, people and heritage on and around the South Downs. Led by the National Trust and supported by a £2.23m National Lottery Heritage Fund grant and funding from People's Postcode Lottery, it will restore lost landscapes and habitats, bring history and local cultures to life and provide new experiences in the outdoors.
Adur & Worthing, SDNPA, ESCC, WSCC, Wealden DC, Sussex Nature Partnership	A ' <a href="#">Greenspaces Project</a> ' is working with local authorities and town/parish councils in Sussex to develop a suite of methodologies for developing the potential of green and open spaces in public ownership to deliver benefits for nature and people – thus increasing their relevance across a range of public sector objectives including climate change, health and wellbeing, biodiversity and environmental quality. A number of case studies have been developed using a selection of green spaces in Sussex to guide learning and development of tools for park managers.
Sussex Nature Partnership and Sussex Local Authorities	In August 2021 Sussex Nature Partnership established a Local Authority Network to help local authorities prepare for new obligations arising from the Environment Act (e.g. Biodiversity Net Gain, Local Nature Recovery Strategies), by creating a safe shared space to troubleshoot, plan and share best practice and learning. Feedback shows this to have been a huge success and Las have agreed to fund it for another year (£650 per council). Town and Parish Councils have also shown an interest so development of a webinar programme for them is ongoing.

Next steps	<ul style="list-style-type: none"> <li>➤ The Board to champion the creation and delivery of the new Local Nature Recovery Strategies for Sussex through the delivery of robust local plan policies that support nature recovery and by supporting the development of a pipeline of projects aimed at delivering biodiversity, carbon offsetting, health &amp; wellbeing, and wider societal benefits.</li> </ul>
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**6. Home Visits:** supporting Southern Water’s 50,000 water and energy efficiency home visits

Key achievements	<p>This year 1,211 home visits have been undertaken in the Greater Brighton area.</p> <p>T100 is a commitment that by 2040 consumption of water on average will be reduced to 100 litres per person per day. There is an interim goal of 129 litres by 2025 to keep on track. As part of T100 Southern Water are trialling new clip-on smart meters in 4 locations including Brighton. This will test an assumption that water consumption can be reduced by a further 3-5% simply by giving people data on how much they use and behavioral nudges. 1,044 devices have been deployed (1500 planned) and so far, 60 property level leaks have been detected. Connectivity to mobile networks causing biggest blocker.</p>
Next steps	<ul style="list-style-type: none"> <li>➤ Board to continue to use collective voice to push for tighter water and energy efficiency standards in new homes and to champion retrofitting. This should be supported by local planning policies.</li> </ul>

**7. Low Carbon Heating:** rolling out schemes to replace oil home heating with electric and other low carbon fuels

Key achievements	<p>The Greater Brighton Homes Retrofit Taskforce promotes sub-regional working to seek the best solutions for delivering the decarbonisation of council owned housing stock. The aim is to achieve this through analysis of stock types (archetypes) to consider the impact and cost of applying a range of decarbonisation measures through an assessment of 10 main types of housing. Scenarios are modelled across stock types to provide evidence of carbon impact, household fuel costs and implementation costs.</p>
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	<p>Costs to landlord, energy cost for tenants and whole life carbon costs are the key metrics.</p> <p>Modelling and building assessments include impacts of different levels of intervention ranging from minimum, through medium to deep, with measures from replacement lighting, windows and doors, through to solar PV, wall, roof and suspended floor insulation, and replacing of heating systems.</p>
Adur & Worthing Councils	<p>The council received £5m of Heat Networks Investment Project funding to commercialise and deliver the Worthing Heat Network and is in the dialogue phase of procurement. An appointment of a concessionaire partner is expected to be made in Spring 2023.</p> <p>This will decarbonise a significant percentage of public sector buildings within Worthing, including the hospital, Civic Quarter and cultural sites whilst providing infrastructure for new developments and retrofit connections to decarbonise more economically than through individual building-level solutions.</p> <p>Two large Adur Homes gas boilers have been turned off permanently and replaced with ground source heat pump systems. Air Source heat pumps will be installed at the Shoreham Centre in autumn 2022.</p>
BHCC	<p>Currently scoping the next contract for heating and hot water provision in council-owned housing, that will support a transition away from gas over the next 10-15 years. Installed some air-source heat pumps in council housing over the last year.</p>
Crawley BC	<p>Crawley Homes working on plan to decarbonise social housing and working with Net Zero collective to develop deep retrofit plans progressing with trial of initially 10 house archetypes that will inform blueprint for decarbonisation for whole housing stock.</p> <p>Crawley Town Centre District Heat Network became operational in May 2022 and is now providing affordable low carbon heat to residents in three social housing blocks (approx. 300 units) and the new Civic Centre and commercial offices. A feasibility study on possible expansion and further decarbonisation of the heat network is currently underway.</p>
Southern Water	<p>Heat exchange from sewers - Southern Water are working with local councils and specialist suppliers to help harness the power of the sewer network. On average, sewers have an ambient temperature of 17°C. Using heat exchange to provide heat generated from sewers, provides an alternative source for existing buildings and new developments. Currently working with Worthing Borough Council, on the heat network project that will eventually link up 20 public buildings including the town hall, hospital, leisure</p>

	centre, schools and law courts as well as new developments. This has the potential to reduce carbon emissions by up to 3,000 tonnes a year - the equivalent of the energy used by 1,325 average-sized homes.
UoS	The University of Sussex commissioned Greater South East Energy Hub to undertake a feasibility study into the replacement of its Combined Heat and Power Plant with a low carbon alternative. The findings are being analysed ahead of undertaking more detailed feasibility and design work as part of a larger programme of work to be a net zero campus by 2035. This work will be funded through a £1.9m sustainability budget within our Education Research and Investment Programme.

#### 8. **Public Buildings:** reducing energy use by 50 per cent by 2030

Adur & Worthing Councils	<p>£2m of Public Sector Decarbonisation Scheme (PSDS) funding has been spent on reducing emissions from public sector buildings, this included multiple heat pumps, solar PV, control system and fabric efficiency upgrades at a variety of council owned sites.</p> <p>£140k of Low Carbon Skills Funding has been secured to deliver heat decarbonisation plans for the remainder of AWC's corporate boilers.</p> <p>Further PSDS funding opportunities are being sought to deliver improvements to buildings connecting to the Worthing Heat Network.</p>
Arun DC	Arun District Council is currently in the process of commissioning energy audits for a number of buildings, including its main office (Civic Centre, Littlehampton) and some of the leisure centres. This work will help highlight the best way forward to reduce the emissions these buildings produce. Improvements could include some of the following; upgrades to the building envelope and thermal insulation, review of heating and heating control systems, reductions in water usage and the installation of PV and battery storage systems. A fabric first approach will always be taken
BHCC	<p>High-level designs and business cases have been completed for an additional 0.5MW of rooftop solar commissions in 2022/23, currently carrying out pre-procurement checks and financial appraisals with the aim to be on-site by winter 2022.</p> <p>Energy audits completed on 60 of the biggest consuming sites, responsible for around 50% of the total corporate operational emissions.</p>

	<p>Low Carbon Skills Fund (LCSF) funding secured for another 30 sites, to be commissioned across operational and rented commercial portfolio by the end of 2022-23. Heat decarbonisation Plan produced to identify opportunities for implementing Low carbon heat and enabling improvements works.</p> <p>Will be submitting Public Sector Decarbonisation Scheme 3b application for qualifying sites.</p> <p>Pilot programme underway to install tranche of 50 AMR devices to highest consuming water sites. Data will be scrutinised to identify areas for introducing additional efficiency measures. Internal recycling fund established to support education property with commissioning any remaining LED retrofit works. Heat pump retrofit underway to community hub applying 'Whole Building' fabric first with hopes of extrapolating the model to multiple similar sites into 2023/24.</p>
Crawley BC	New Town Hall being constructed, connected to District Heating Network, to BREEAM Excellent standard; due for completion autumn 2022.
Lewes-Eastbourne	Developing proposals for 2023/24 for energy surveys to prepare for any future capital grants
Mid-Sussex	Adopted the Sustainable Economy Strategy and Action Plan which features 23 actions designed to reduce carbon emissions of both the Council and the District. Applied for a national grant to decarbonise one of our largest leisure centres. Installed PV solar panels on Council buildings that generated 27,404 kwh of pollution-free electricity during 2020/21, a carbon reduction of 6.9 tonnes.
Southern Water	Three sites have been identified for developing solar in the GB area totalling 2MW, as well as continuing to use alternative fuel by generating biogas. This forms part of Southern Water's Net Zero Plan, with a target to generate 24% of its own renewable energy by 2025.
UoB	<p>One of the top-10 UK universities for solar power, our 1,500 solar panels generate over 445,000kWh per year - equivalent to energy used in 150 homes.</p> <p>Innovative partnership approaches with Brighton Energy Cooperative have overcome financial and technical barriers to implementation with our demonstration of solar-powered electric vehicle charge points at Varley Park student halls of residence.</p>
UoS	The University of Sussex Sustainability Strategy commits to improving the energy efficiency of our estate. Work is being commissioned to enable the university to undertake a detailed audit

	of the 20% most poorly performing buildings and begin to produce business cases for improvements by 2023.
Next steps	<ul style="list-style-type: none"> <li>➤ Local authorities are carrying out programmes of energy efficiency in public sector buildings and bidding for funds. Greater South East Net Zero Hub is supporting local authorities to bid for government decarbonisation funds.</li> </ul>

9. **Innovation:** establishing an Innovation Forum to share latest research and best practice

Key Achievements	<p>Extensive programme of research to advance Pledges 1-10 continues at pace - see list of research projects at Appendix 2</p> <p>UoB is the research lead for the GBEB Retrofit Taskforce supporting the decarbonisation of social housing stock. This research work was completed in the summer.</p> <p>The Living Coast Biosphere Partnership has continued delivering and supporting urban nature recovery and resilient natural environments through projects such as the National Lottery Heritage Funded <a href="#">Changing Chalk – Greening The Cities</a> and Natural England funded <a href="#">Wilder Verges</a>, which specifically aims to start enabling the development of an urban nature recovery network in response to the Environment Act.</p> <p>The Biosphere continues to utilise active arts, web and social media based public engagement opportunities to communicate across multiple audiences in support of resilient natural environments and via projects such as The <a href="#">Living Coast Undersea Experience</a>, <a href="#">City Nature Challenge</a>, <a href="#">The Living Coast Business Network</a>, and <a href="#">The Living Coast Artist Residencies</a>.</p> <p>The Living Coast is also enabling original research in SuDS effectiveness, development and delivery with support from an international multi-disciplinary team including the Intergovernmental Hydrological Programme via the <a href="#">Promoting Sustainable Development through UNESCO’s Programmes and Sites</a> project. As well as continuing to deliver the current programme the Biosphere Partnership’s focus for 2022 – 2024 is also to develop a new 10-year strategic plan for the region focussed on resilient natural environments and support the data, governance and stakeholder review required as part of the decennial UNESCO periodic review process for the designation.</p>
Next steps	<ul style="list-style-type: none"> <li>➤ Academic-led collaboration between both universities to convene key Greater Brighton decision-makers and scope out a Green Blueprint (i.e. a route map) for becoming a net</li> </ul>



	<p>zero city region, drawing on developments and learning to date across all other Board pledges and plans.</p> <ul style="list-style-type: none"> <li>➤ The Green Blueprint will set out what changes need to be made, by when, who is responsible, likely costs, dependencies, consequences and risks. It will serve as a guide for major investment planning, policy change and organisational action.</li> </ul>
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**10. Lobby:** using Greater Brighton’s powerful voice to lobby government for investment

Next Steps	<ul style="list-style-type: none"> <li>➤ The Board is supporting development of a Greater Brighton Hydrogen Strategy, which will form the blueprint for future investment in hydrogen in the city region. Once published (February 2023), the Strategy will be a tool to generate engagement with local MPs and Central Government.</li> <li>➤ The emerging Blue/Green Investment Plan will contain a pipeline of investment projects, which will showcase the work taking place and state future ambitions. Projects in the pipeline would have an outline business case in readiness to pitch for investment. The pitch document can be communicated to government to drive government interest in the activities of the region leading to investment.</li> </ul>
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**Appendix 2 - Developing new solutions for tackling climate change:  
some examples from University of Sussex**

Innovation	Academic lead/ research group	Outline	GBEB Pledges
<b>Electric vehicle battery developments</b>	Prof Peter Kruger <a href="#">Sussex Programme for Quantum Research (SPQR)</a>	<ul style="list-style-type: none"> <li>▪ Just completed: a new quantum sensor commercial battery imaging system co-developed with local green energy start-up, CDO2, unveiled at low carbon vehicle technology event <a href="#">Cenex-LCV</a> (22-23 September 2021).</li> <li>▪ Under development: Safer more efficient batteries for airline industry</li> </ul>	3, 4 & 9
<b>Energy demand &amp; infrastructure planning</b>	Profs Tim Foxtan, Steven Sorrell, Dr Mari Matiskaninen  Dr Ralitsa Hiteva <a href="#">Centre for Research into Energy Demand Solutions (CREDS)</a>	Consortium researching into the changes in energy demand needed for the transition to a secure and affordable, low carbon energy system and the implications for infrastructure planning.  Live project: Sussex University-sponsored programme of Innovation Forums on tackling aspects of climate change for local stakeholders.	4, 7, 8 & 9
<b>Kelp</b>	Dr Mika Peck	Expert in the conservation of tropical environments and development of new tools to monitor the state of the environment, from tropical rainforest to reefs.  Live project: Sussex University-sponsored kelp sample collection (with University of Brighton) and evaluation to produce a roadmap for kelp farming in Sussex Bay area.	1, 3 & 9

<b>Net zero neighbourhoods</b>	Dr Marie Claire Brisbois & Dr Donal Brown	Experts in domestic energy policy. Live projects: <ul style="list-style-type: none"> <li>▪ Improving energy efficiency in private rented accommodation, working with the UoS student accommodation service; stakeholder event planned in Oct / Nov (incl. landlords, letting agencies, BHCC private housing team and Sussex Student Lettings) to expand the project</li> <li>▪ Analysing EPC and HMO data to correlate relationship between housing condition and landlord type</li> <li>▪ Consortium with Glasgow &amp; Leeds to understand consumer behaviour in energy choices.</li> </ul>	3 & 7
<b>Improving water pump and domestic appliance efficiency</b>	Dr Esra Sorguven, <a href="#">Thermo-fluid Mechanics Research Centre</a>	Live project to improve energy efficiency of water pumps through novel flow measurement techniques (Sussex funded project, working with Southern Water)  Several live projects to improve the design and manufacturing of domestic appliances which use c 2.5% of the UK's energy consumption and generate £7bn in annual revenue – with Beko; Arcelik & AIRONN.	2, 3 & 9
<b>Hydrogen Engineering expertise</b>	Dr Spyros Skarvelis-Kazakos  <a href="#">Dynamics, Control and Vehicle Research</a>  Dr Fan Zhang	Expert in hydrogen-related technologies and a member of the Supergen H2FC Science Board ( <a href="http://www.h2fcsupergen.com/wp-content/uploads/2019/01/UK-H2FC-Capability-Document.pdf">http://www.h2fcsupergen.com/wp-content/uploads/2019/01/UK-H2FC-Capability-Document.pdf</a> - see p.90).  <b>Smart grids:</b> His current focus is on hydrogen as a multiple energy carrier optimisation and on increasing renewable energy capacity by improving electricity grid reliability and controllability (thus reducing the impacts of the uncertainty of renewables).  Expert in hydrogen embrittlement of duplex stainless steel: Hydrogen embrittlement is a widely known phenomenon in high strength materials that are responsible for subcritical crack growth in material, fracture initiation and catastrophic failure with subsequent loss in mechanical properties such as ductility, toughness and strength.	3, 7 & 9

	<p>Dr Kun Liang</p> <p>Prof Julian Dunne</p>	<p>Hydrogen energy systems are reliant on the production, transportation, storage, and use of gaseous hydrogen. The safety, durability, performance and economic operation of these systems is challenged by the hydrogen embrittlement of the materials. Fan has the expertise required to assess safety and materials efficiency in a demonstration project.</p> <p>Expert in hydrogen laminar flame measurement and engine performance with addition of hydrogen. Recently he has some work on cryogenics systems which can re-liquify hydrogen if there is boil-off gas in the charging point. Kun has the expertise required for engine performance measurements and modelling hydrogen combustion in IC engines, as well as similar measurements and modelling in CHP.</p> <p>Developed new patented technologies at Sussex for free-piston engines offering electrically-controlled VCR (variable compression ratio) needed for hydrogen or ammonia combustion in internal combustion (IC) engines. Free-piston engines are being seriously considered for hybrid electric powertrains, either in series propulsion or as a range extender.</p>	
<b>Zero waste RFID tags using new nanomaterials</b>	<p>Prof Alan Dalton</p> <p><a href="#">Materials Physics Group</a></p>	<p>Commercial work with business partner AMD to develop a number of graphene-based nanomaterials which are metal-free and more ecologically-friendly. Current developing an alternative metal-free radio-frequency identification tag for use by supermarkets to track products with major supermarket chain.</p>	3 & 9
<b>Vehicle to Grid optimisation</b>	<p>Dr Arash Moradinagade-Dizkah</p> <p><a href="#">Dynamics, Control and Vehicle Research</a></p>	<p>Live project:</p> <ul style="list-style-type: none"> <li>▪ Optimisation and control, energy efficient control allocation, vehicle to grid and smart grids</li> </ul>	3, 4 & 9

<b>Improved efficiency of current combustion engines</b>	Profs Julian Dunne & Peter Fussey <a href="#">Dynamics, Control and Vehicle Research</a>	Live projects: <ul style="list-style-type: none"> <li>▪ Optimised Resonating Free Piston Generator</li> <li>▪ Evaporative Cooling of Internal Combustion Engines - with Ricardo.</li> </ul> Technology available to be licensed: High Energy Density Power Generator.	3 & 9
<b>Renewable Power generation</b>	Prof Martin Rose	Expert in renewable power generation – urban wind and wave. Live project to design wind powered car “Sussex Power Storm”	3 & 9
<b>Future Refrigeration: ammonia linear compressor</b>	Dr Kun Liang	International partnership to investigate future refrigeration systems using a novel oil-free linear compressor and ammonia as refrigerant. The benefits of such systems are zero ozone depletion potential (ODP), zero global warming potential (GWP), high efficiency and low cost.  Live Sussex University-sponsored project to support linear technologies including development of Stirling engine for electric vehicle range extension.	3 & 9  3, 4 & 9
<b>Renewable energy from waste</b>	Dr Mark Puttock-Brown	Experimental and numerical investigation of heat transfer and fluid dynamics of rotating cavities in gas turbine secondary air systems working with partner GE Aviation.  Numerical design of radial turbines for waste heat recovery utilising organic working fluids.	3 & 9
<b>Civic crowdfunding</b>	Dr Donal Brown & Dr Anna Watson SPRU	This project funded by the Local Government Association Net Zero Innovation Programme (LGA NZIP) Lewes and Eastbourne councils partnered with researchers from the University of Sussex to explore alternative community finance mechanisms and ownership of low carbon and natural infrastructure. This ‘community led finance’ may include different forms of philanthropy, community share offers or community bond.	9

<b>Energy Demand Research Champion</b>	Dr Mari Martiskainen	Develop an inclusive, interdisciplinary and cross-sectoral Centre that advances knowledge and uptake of energy demand reduction solutions,	7, 8 & 9
<b>Advancing Capacity for Climate and Environment Social Science</b>	Benjamin K Sovacool	Advancing Capacity for Climate and Environment Social Science (ACCESS) aims to champion and coordinate social science to address key environmental challenges spanning biodiversity, sustainability and decarbonisation. Provide social science insights to support the transition to a sustainable and biodiverse environment and a net zero society.	9
<b>Biodiversity and the water cycle: can rewilding mitigate the impacts of hydrological extremes</b>	Dr Christopher Sandom	Determine the ways in which rewilding influences hydrology and hydrological extremes. (O2) Support decision-making in rewilding practice across public and private sectors. (O3) Inform future research priorities and improved monitoring of rewilding programmes.	5

**Appendix 3 – Key projects from University of Brighton aligning with GB pledges – October 2022**

Innovation	Academic lead/ research group	Outline	GBEB Pledges
<b>Blue Carbon Research</b>	Ray Ward Centre for Aquatic Environments	<p>The Universities of Brighton and Portsmouth have agreed to co-fund a Blue Carbon Research fellow post to support and develop marine and coastal research within the Sussex region and will help develop research involving climate change mitigation, biodiversity enhancement, environmental contamination, fisheries management and ecosystem service provision.</p> <p>The University of Portsmouth has submitted a bid to the Natural Environment Research Council with University of Brighton and other partners to carry out a project to establish a research network to examine practical opportunities to better integrate biodiversity and finance in seascape restoration.</p>	1 & 9
<b>Grass to Gas</b>	Penny Atkins Advanced Engineering Centre	Ongoing research for the development of waste to energy systems able to process grass and other waste streams into biogas and biofuels. Various collaborations with local and national partners.	3 & 9
<b>Hydrogen vehicles</b>	Rob Morgan/ Penny Atkins Advanced Engineering Centre	Long lasting collaborations and research on the development and testing of hydrogen/hybrid engines for vehicles, including road vehicles and ships with local, national and international partners.	3 & 9

<b>Electric vehicles</b>	Steven Begg Nicholas Miche  Advanced Engineering Centre	Projects focusing on development and optimization of electric vehicles in collaboration with local and national partners.	3 & 9
<b>Rewilding</b>	School of Applied Sciences	East Sussex County Council is working with Sussex Nature Partnership and Kent Wildlife Trust on a SELEP project, which includes Lewes District, to develop knowledge around supply and demand and brokerage hub model for nature-based solutions. The project will report its findings in Q4 2022. University of Brighton is on the steering group. University of Brighton delivered a Masters student project under the environmental placement module (coordinated with Green Growth Platform) on woodland creation mapping using GIS for Lewes DC. This led to a large mapping project of the SDNP area by the same student which she undertook as a job following graduation. Based on this work SDNPA will publish a woodland opportunity mapping report in Q4 2022.	5 & 9
<b>Electric Batteries management</b>	Marco Bernagozzi  Advanced Engineering Centre	Ongoing research on optimization of electric batteries, with particular focus on thermal management, energy efficiency, and the impact of external conditions such as temperature and vibrations on the performance of batteries.	3 & 9
<b>Waste to Energy</b>	Angad Panesar  Advanced Engineering Centre	Design, prototyping and testing of various innovative energy generation power cycles and energy storage solutions, with a focus on low temperature waste heat and molten salts storage solutions.	3, 7 & 9
<b>Water Recycling</b>	Ian Mayor Smith  Centre for Aquatic Environments	Various ongoing projects and collaborations with national and international partners focusing on water quality and water recycling.	2 & 9



<b>Low Carbon Heating solutions</b>	Marco Picco Advanced Engineering Centre	Development and validation of innovative low carbon heating solutions and heating strategies, including Personal Comfort Systems, Radiant Systems and Waste Heat Recovery.	7 & 9
<b>Net Zero Buildings</b>	Duncan B. Brown Marco Picco Design for Circular Cities and Regions (DCCR) Research and Enterprise Group Advanced Engineering Centre	Numerous ongoing projects with local partners and stakeholders supporting the development of roadmaps toward net-Zero in private and public buildings. With strong focus not only on energy savings, but financial savings and embodied carbon/circular economy aspects.  Leading the work of the GBEB Retrofit Taskforce supporting the decarbonisation of social housing stock.	8 & 9

