

**VMED O2 UK Limited**

**Green Bond Progress Report as at 31 December 2022**

**31 May 2023**

**VMED O2 UK Limited**  
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## **Introduction**

As per the VMED O2 Green Bond Framework (see below), VMED O2 UK Limited (the Company) presents its Green Bond Progress Report as at 31 December 2022 (the Progress Report).

### **Virgin Media O2 Joint Venture**

Virgin Media O2 (the Joint Venture or VMED O2) launched on 1 June 2021, a 50:50 joint venture between Liberty Global plc and Telefónica SA, which brought together Virgin Media's operations in the United Kingdom (UK) (Virgin Media) with O2 Holdings' operations in the UK (O2 Group). The Company is the parent company of the Joint Venture through which Liberty Global plc and Telefónica SA hold their ownership interests. The Virgin Media and O2 Group operations are held through wholly-owned subsidiaries of the Company. One of the Company's wholly-owned subsidiaries, VMED O2 UK Financing I plc, issued the VMED O2 July 2021 Green Bonds (as defined herein), the Joint Venture's first issue of Green Bonds.

### **Sustainability in the Joint Venture**

Following the Joint Venture's formation on 1 June 2021, we began the work of reviewing the existing programmes and developing a single sustainability programme for the newly combined operations. The Joint Venture launched its new sustainability programme, Virgin Media O2's Better Connections Plan, on 25 May 2022 and this is discussed in more detail below. Following on from the launch of the Better Connections Plan, VMED O2 reviewed and re-issued the VMED O2 Green Bond Framework in August 2022, meeting the commitment made in its original June 2021 Green Bond Framework.

## **Virgin Media O2's Better Connections Plan**

Launched on 25 May 2022, Virgin Media O2's Better Connections Plan underscores our commitment to make our business even better for people, communities and the planet. Our purpose, people and products will power stretching new goals around carbon, circularity and communities aiming to reduce our impact on the climate, eradicate electronic waste, and connect the disconnected:

- Enabling a zero-carbon future: we will use our digital know-how and infrastructure to help create a zero-carbon future, faster.
- Accelerating a circular economy: we will champion a zero waste and more circular technology sector, where material is valued and kept in use - again and again.
- Connecting the disconnected: we will boost digital inclusion, so that everyone can stay connected to the people they love and the services they rely on.
- Underpinned by Building a better business: we will create a leading inclusive workplace where everyone can be their best, proudly uphold our values, and get involved with local communities.

### **Enabling a zero-carbon future**

To prevent the worst impacts of climate change, we will all need to change the way we live and work - for the better, and for good. At Virgin Media O2, we believe that technology can play a pivotal role in the shift towards a decarbonised future, and have set two key goals to guide our climate action:

1. Greener Business – we are targeting net zero carbon in our full value chain, including our operations, products and supply chain, by 2040 (with interim targets for 2025 and 2030).

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2. Zero-carbon future – we will help accelerate the UK’s transition to net zero by using our products and services to help our customers avoid 20 million tonnes of CO<sub>2</sub>.

To keep us on track, assess our progress and make sure we always act in line with climate science, we’re aligning with industry experts, organisations and coalitions - including the Science Based Target initiative’s (SBTi) Net-Zero Standard, The Carbon Trust’s Route to Net Zero Standard and The Climate Pledge. We’re also a member of the Climate Group’s EV100 initiative which will see us transitioning our fleet of more than 4,000 vehicles to electric vehicles by the end of 2030.

As well as mitigating our own climate impact, we’re also providing the connectivity foundations for smart cities, smart metering and autonomous vehicles that could save up to 20 million tonnes of carbon by 2025. And we’ll continue to educate and inform our customers about how they can live lower-carbon lives through our TV platform, advertising, venues and partnerships.

**Accelerating to a circular economy**

We believe that bold action needs to be taken to combat the growing problem of electronic waste (e-waste). We’re pledging to reduce the huge numbers of devices that end up in landfill every year by extending the life of the devices we sell and encouraging the reuse of products and raw materials. Our 2025 circularity targets are:

1. A zero waste future – we are targeting zero waste operations and products by making sure more than 95% of operational waste is recycled, and less than 5% will be incinerated.
2. Circular by design – we will enable 10 million circular solutions and actions to help customers tackle e-waste, from sustainably recycling devices, to sending back old kit and donating unwanted smartphones and tablets to people who need them.

We’ll take a ‘re-use first’ approach to our branded products, and reduce our reliance on virgin raw materials in new products; make sure that 100% of customer packaging for own-branded products is widely recyclable and contains zero single-use plastic; and reuse or recycle 100% of all returned customer and network equipment.

We’ll also seek to improve awareness of e-waste - and how customers can tackle it by recycling, rehoming old devices or buying second-hand through schemes such as O2 Recycle, Like New (refurbished devices), or our take back scheme for routers and set-top boxes.

**Help eradicate data poverty**

Our Better Connections Plan sets out our ambitions to help eradicate data poverty, boost digital skills and improve digital literacy - connecting the disconnected across the UK so that everyone can participate in a digital society. Our aims are centred around two key 2025 targets:

1. Connect one million digitally excluded people through free and affordable connectivity programmes, tariffs and services.
2. Improve the digital skills and confidence of two million people, expanding its digital skills agenda with Good Things Foundation, and continuing to support parents and families to be safer online with Internet Matters. The company will also continue its partnership with Carers UK to improve unpaid carers’ access to digital tools, support and resources to make caring easier.

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To raise awareness of data poverty, and take steps to make access to data fairer, we established the UK's first ever National Databank in July 2021 with the Good Things Foundation. We've since launched Tech Lending Community Hubs - connecting community groups with data, devices and support - and our Community Calling scheme rehomes old smartphones, together with a year's worth of free data, to those in need.

We are also aiming to improve the digital literacy of one million people through tailored training that will help provide the digital skills and confidence needed to access essential online services. A national network of 5,000 digital inclusion hubs, co-ordinated through the Online Centres Network, will empower local communities in deprived areas to tackle exclusion and inequity.

Finally, our ongoing partnership with Carers UK will shine a spotlight on the mental health and wellbeing of unpaid carers and focus on developing the best digital tools to support them and make caring easier.

**A better way to do business**

At Virgin Media O2, we believe that how we do business matters. We're determined to champion inclusive, equitable values, create a great place to work, and ensure our partners and suppliers uphold our stringent ethical and environmental standards.

Our new diversity, equity and inclusion strategy, All In, has four 2027 ambitions to increase workplace inclusion:

1. To have equal representation of women and men in our senior leadership team.
2. To have driven forward progress for gender parity – including all gender identities and expressions.
3. 25% of the organisation will be from global majority employees
4. 15% of the leadership team will be from underrepresented ethnic groups.

We'll introduce more family-friendly policies and offer support and flexibility to all employees so they have everything they need to be their best – both at work and in their personal lives. Employees can also play a greater role in the places they live through our Take 5 scheme which offers five paid volunteering days a year, with the ambition to support 1 million people in communities across the UK by 2025.

Building on our ethical sourcing expertise and using our spend to improve sustainability and social impact within our supply chain is also a key focus: we'll ensure that all major purchases commit contractually to defined sustainability requirements and aligned carbon reduction goals.

**VMED O2 Green Bond Framework (August 2022)**

**Overview**

VMED O2 published its initial Green Bond Framework in June 2021. This framework was refreshed following the May 2022 launch of the Better Connections Plan and was re-issued in August 2022 (the VMED O2 Green Bond Framework). The VMED O2 Green Bond Framework provides the framework under which Green Bonds, as defined in the International Capital Market Association's (ICMA) Green Bond Principles 2021, have and can be issued.

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The VMED O2 Green Bond Framework sets out the eligibility, selection and evaluation criteria of VMED O2 Eligible Green Projects (as defined therein) as well as the rules governing the management of the proceeds and reporting on project progress, impact reporting and external assurance. VMED O2 Eligible Green Projects are those that support our transition towards a net zero carbon and zero waste future for the UK in areas such as energy efficiency, eco efficient circular economy products, clean transport and renewable energy.

The VMED O2 Green Bond Framework requires that an amount equal to the net proceeds of any Green Bonds raised under the VMED O2 Green Bond Framework will be allocated to finance or refinance VMED O2 Eligible Green Projects, as per the eligibility criteria and project selection process outlined in the VMED O2 Green Bond Framework. Once approved, such allocations have been reflected in our internal records in the Green Bond Register we have established.

The VMED O2 Green Bond Framework allows a look-back period of up to 36 months from the issuance of Green Bonds for the refinancing of VMED O2 Eligible Green Projects. In addition, VMED O2 intends to fully allocate an amount equal to the net proceeds from the issuance of Green Bonds to the financing and refinancing of VMED O2 Eligible Green Projects no later than 36 months after the issue of the Green Bonds.

Any portion of the net proceeds of a Green Bond that has not been allocated to VMED O2 Eligible Green Projects by the end of the 36 month period following the date of issue will be managed in accordance with our standard liquidity management practices, whereby funds may be invested in bank accounts, money market deposits or institutional money market funds.

These provisions mean that the look-back period for VMED O2's initial Green Bond issue in early July 2021 extended back to July 2018 and that the allocation of eligible spend against the net proceeds of circa £1.7 billion was due to be completed no later than June 2024. As set out below, VMED O2's July 2021 Green Bond issue is now fully allocated as at 31 December 2022.

### **Reporting**

The VMED O2 Green Bond Framework commits VMED O2 to making available progress reports covering the allocation of amounts to the VMED O2 Eligible Green Projects on an aggregate basis and at the level of the project portfolio, as well as impact reporting through a defined range of possible KPIs.

Following on from the first Progress Report as at 31 December 2021, VMED O2 intends to provide updated Progress Reports annually until full allocation of the net proceeds of any Green Bond outstanding has been achieved. Such Progress Reports will be prepared as at calendar year ends.

### **Underlying Guidance and Validation**

The VMED O2 Green Bond Framework is aligned with the ICMA Green Bond Principles 2021 and Sustainalytics, a leading global independent company in Environmental Social Governance ("ESG") research and rating provider, has provided a positive Second Party Opinion on the VMED O2 Green Bond Framework.

KPMG's Assurance Report on the Use of Proceeds as at 31 December 2022 and certain 2022 impact reporting metrics, which provide limited assurance using the assurance standard ISAE (UK) 3000, is available with this Progress Report (and those published in prior years) on the Responsible Business section of the Virgin Media O2 Corporate website.

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**Governance Arrangements**

The VMED O2 Green Bond Framework identifies the Environmental Steering Committee (the Environmental SteerCo) as the body overseeing the selection and evaluation process of VMED O2 Eligible Green Projects in accordance with the VMED O2 Green Bond Framework's eligibility criteria. The Environmental SteerCo is comprised of senior representatives from relevant operational teams and supported by the Sustainability and Finance teams. It is chaired by VMED O2's Head of Environment, Climate and Nature and attended by VMED O2's Chief Technology Officer, a member of VMED O2's Leadership Team.

The Environmental SteerCo's terms of reference set as its purpose to act as a sub-committee of VMED O2's Sustainability and Responsible Business committee in managing the environmental aspects of VMED O2's business. The Environmental SteerCo will manage all decisions regarding the delivery of VMED O2's environmental strategy, communications plans and project prioritisation in addition to acting as the steering board for key environmental projects. The Environmental SteerCo represents key areas of the VMED O2 business delivering and benefitting from these environmental projects.

The Environmental SteerCo's meets on a bi-monthly basis and its responsibilities include:

1. Supporting the development and delivery of VMED O2's environmental strategy, including communication of the environmental strategy to internal and external stakeholders;
2. Our Environmental Management system;
3. Key environmental projects and related Executive OKRs (Objectives Key Results);
4. Green Bond financing.

With regard to the fourth item, the Environmental SteerCo has delegated the review and approval of proposed allocations of spend on VMED O2 Eligible Green Projects to a "Green Bond sub-group". The Green Bond sub-group is drawn from the Environmental SteerCo membership, with the Green Bond Registrar (a member of the VMED O2 Accounting & Reporting team) and a Treasury representative also included as invited participants.

The Green Bond sub-group meets at a minimum bi-annually for:

1. the review and approval of proposed allocations of eligible spend, including deciding on the inclusion of spend on new eligible projects;
2. the review and approval of the periodic Allocation and Impact Reporting;
3. monitoring of the project portfolio for outcomes outside of the August 2022 VMED O2 Green Bond Framework's eligibility criteria;
4. the annual monitoring of the continued eligibility of the VMED O2 Eligible Green Projects as set out in this August 2022 VMED O2 Green Bond Framework; and
5. following circulation for review and comment to the Environmental SteerCo, the final review and approval of any revisions to the VMED O2 Green Bond Framework.

The Green Bond sub-group notifies the Environmental SteerCo of decisions made and provides feedback on its activities to the Environmental SteerCo at the latter's regular bi-monthly meetings. To allow the sub-group sufficient time to perform the above governance procedures with the necessary rigor, the allocations of spend over the look-back period was split between the Green Bond Progress Report as at 31 December 2021 and 2022.

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## **Inaugural Green Bond Issue – the VMED O2 July 2021 Green Bonds**

The Joint Venture, through one of its wholly-owned subsidiaries VMED O2 UK Financing I plc, made its inaugural Green Bond issue in July 2021 with net proceeds of £1,689.1 million (the Net Proceeds).

On 7 July 2021, we issued \$850.0 million principal amount of dollar denominated senior secured notes and £675.0 million principal amount of sterling denominated senior secured notes as Green Bonds under the VMED O2 Green Bond Framework. The senior secured notes were issued at par, mature on 15 July 2031 and bear interest at 4.75% and 4.50% respectively.

On 19 July 2021 we subsequently issued an additional \$550.0 million principal amount of the 2031 4.750% Dollar Senior Secured Notes at a premium of \$4.1 million. This brought the total issuance of these senior secured notes to \$1,400.0 million and £675.0m (together, the VMED O2 July 2021 Green Bonds).

The Net Proceeds of the VMED O2 July 2021 Green Bonds' total issuance of \$1,400.0 million principal amount and £675.0 million principal amount, translated using the spot foreign exchange rates on the date of receipt of the funds for the non-sterling denominated element, was £1,689.1 million net of bank fees and other third-party issue costs.

The summary details of the VMED O2 July 2021 Green Bonds issued are as follows

	<b>USD</b>	<b>GBP</b>
Issuer		
Amount	\$1,400 million	£675 million
Interest Rate	4.75%	4.50%
Maturity Date	15 July 2031	15 July 2031
ISIN (Regulation S Global Note)	USG9444PAD45	XS2358483258
ISIN (144A Global Note)	US92858RAB69	XS2358483332
Overall Net Proceeds (£'m)	£1,689.1 million	

### **Green Bonds in Issue as at 31 December 2022**

All of the VMED O2 July 2021 Green Bonds set out above remained in issue as at 31 December 2022.

## **Eligible Green Project Allocations**

### **Allocation of Eligible Spend against the Net Proceeds of the VMED O2 July 2021 Green Bonds**

As at 31 December 2022 expenditure on VMED O2 Eligible Green Projects of £1,689.1 million had been allocated against the Net Proceeds of the VMED O2 July 2021 Green Bonds, meaning that those Net Proceeds of £1,689.1 million were fully allocated:



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Category	Description	Look-back or Post Issue	Amount (£'m)	% of Net Proceeds
<b>Allocation as at 31 December 2021</b>			<b>999.4</b>	<b>59.2%</b>
Energy Efficiency	21St Century Voice (Roll out VOIP in place of traditional copper-based systems) Jul 2018 to Jun 2021	Look-back	55.9 <sup>(1)</sup>	3.3%
Energy Efficiency	OREO Programme Jul 2018 – Jun 2021	Look-back	20.5 <sup>(1)</sup>	1.2%
Energy Efficiency	Data Centre HVAC Replacement	Look-back	1.9 <sup>(1)</sup>	0.1%
Energy Efficiency	Network Upgrade – Jul 2018 – Jun 2021	Look-back	116.4 <sup>(1)</sup>	6.9%
Energy Efficiency	Network expansion – VMB Jul 2018 – Jun 2021	Look-back	177.8 <sup>(1)</sup>	10.5%
Energy Efficiency	Network expansion Jan 2021 – Jun 2021	Look-back	119.6 <sup>(1)</sup>	7.1%
Energy Efficiency	CPE <sup>(2)</sup> Purchases Jan 2021 – Jun 2021	Look-back	23.7 <sup>(1)</sup>	1.4%
Energy Efficiency	Network expansion - VMB Jul 2021 – Dec 2021	Post Issue	30.7 <sup>(1)</sup>	1.8%
Energy Efficiency	Network expansion Jul 2021 – Dec 2021	Post Issue	134.0 <sup>(1)</sup>	8.00%
Circular Economy	CPE <sup>(2)</sup> Screen and Refurbishment costs Jul 2021 – Jun 2022	Post Issue	9.2 <sup>(1)</sup>	0.5%
<b>Allocations in course of 2022</b>			<b>689.7</b>	<b>40.8%</b>
<b>Allocation as at 31 December 2022</b>			<b>1,689.1</b>	<b>100%</b>
<b>Over (under) allocation v £1,689.1m Net Proceeds</b>			<b>-</b>	<b>-%</b>
<b>Spilt of Allocations as at 31 December 2022</b>				
Energy Efficiency		Look-back	1,478.8	87.5%
Circular Economy		Look-back	36.4	2.1%
Energy Efficiency		Post Issue	164.7	9.9%
Circular Economy		Post Issue	9.2	0.5%
			<b>1,689.1</b>	<b>100%</b>
Net Proceeds used for Financing (Post Issue)			173.9	10.3%
Net Proceeds used for Re-financing (Lookback)			1,515.2	89.7%
			<b>1,689.1</b>	<b>100%</b>
<b>Over (unallocated) Net Proceeds as at 31 December 2022</b>			<b>-</b>	<b>-%</b>

(1) KPMG, our independent assurance provider, has provided limited assurance over the selected information in this table denoted by the symbol (1) using the assurance standard ISAE (UK) 3000. See the separate “KPMG Limited Assurance Report to VMED O2 Limited on Use of Green Bond Proceeds and 2022 Impact Reporting metrics as at and for the year ended 31 December 2022” available on the Corporate Statements section of the Virgin Media O2 Corporate website.

(2) CPE: Customer Premises Equipment

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## Impact Indicator Reporting

### Overview

The direct environmental impact of VMED O2 is mainly related to our mobile and fixed networks, along with the mobility of our employees. The indirect environmental impact is related to the energy used for the production and use of our products and services. The mobile and fixed networks alone are responsible for more than 95% of our energy consumption.

Our networks are therefore a significant focus and spend on eligible green projects aiming at delivering energy efficiency in and through our fixed-line network accounted for 97% of the eligible spend allocated against the Net Proceeds of the VMED O2 July 2021 Green Bonds.

### Impact Reporting

On a best effort basis, the Joint Venture intends to report on the environmental impacts achieved by funded VMED O2 Eligible Green Projects. The impact reporting will include a description of VMED Eligible Green Projects and impact metrics such as those listed below measured at the level of the overall business. For more information on our methodologies and definitions, see our “Environmental Reporting Criteria” as set out at: [Corporate Statements - Virgin Media O2](#)

Eligible Green Projects category	Examples of impact indicators
Energy Efficiency	<ul style="list-style-type: none"> <li>• Tonnes of CO2e (scope 1 and 2) per Terabyte data for fixed-line and mobile networks</li> <li>• Tonnes of CO2e (scope 1 and 2) per Fixed-line customer and mobile connection</li> <li>• Tonnes of CO2e (scope 1 and 2) for VMED O2’s combined operations</li> <li>• Electricity use (kWh) per Terabyte data for fixed-line and mobile networks</li> <li>• [kgCO2e per CPE unit (energy in use)]</li> </ul>
Renewable Energy	<ul style="list-style-type: none"> <li>• Annual GHG emissions reduced/avoided in tonnes of CO2 equivalent</li> </ul>
Clean Transportation	<ul style="list-style-type: none"> <li>• Percentage of electric vehicles out of total owned and leased vehicle fleet at most recent year end</li> <li>• Number of clean vehicles deployed (e.g. electric)</li> </ul>
Circular economy adapted products, production technologies and processes	<ul style="list-style-type: none"> <li>• Numbers of CPE (Set top boxes &amp; modems) returned, re-used or re-cycled per annum</li> </ul>

In addition, under the VMED O2 Green Bond Framework, we committed to provide, on a best-efforts basis, a description of VMED O2 Eligible Green Projects funded by the net proceeds of the VMED O2 Green Bonds issued. This activity is discussed in the following section - see “Energy use and CO2 Emissions of the Fixed-line Network”, “Circular Economy for CPE” and “Clean Transport”.

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**Energy use and CO2 Emissions of the Fixed-line Network**

The metrics considered with regard to the environmental impact of our fixed-line network energy include the following:

	2022	2021	2020	2019	2018
Tonnes of CO2e (scope 1 and 2) – location based	(1) 119,333	125,665	147,628	157,845	184,375
<i>year on year changes</i>	-5.0%	-14.9%	-6.5%	-14.4%	
<i>As a % of 2018</i>	64.7%	68.2%	80.1%	85.6%	
Fixed-line customer relationships	5,795,500	5,768,300	5,626,700	5,518,100	5,509,400
<i>year on year changes</i>	0.5%	2.5%	2.0%	0.2%	
Tonnes of CO2e (scope 1 and 2) per Fixed-line customer – location based	(1) 0.02059	0.02179	0.02624	0.02860	0.03347
<i>year on year changes</i>	-5.5%	-17.0%	-8.3%	-14.5%	
<i>As a % of 2018</i>	61.5%	65.1%	78.4%	85.5%	
Tonnes of CO2e (scope 1 and 2) per Terabyte of data – location based	(1) 0.0031	0.0034	0.0047	0.0094	0.0138
<i>year on year changes</i>	-8.8%	-27.7%	-50.0%	-31.9%	
<i>As a % of 2018</i>	22.5%	24.6%	34.1%	68.1%	
Electricity use (kWh) per Terabyte of data	(1) 12.41	12.58	15.23	29.57	38.38
<i>year on year changes</i>	-1.4%	-17.4%	-48.5%	-23.0%	
<i>As a % of 2018</i>	32.3%	32.8%	39.7%	77.0%	

(1) KPMG, our independent assurance provider, has provided limited assurance over the selected information in this table denoted by the symbol (1) using the assurance standard ISAE (UK) 3000. See the separate “KPMG Limited Assurance Report to VMED O2 Limited on Use of Green Bond Proceeds and 2022 Impact Reporting metrics as at and for the year ended 31 December 2022” available on the Corporate Statements section of the Virgin Media O2 Corporate website.

We observe a positive development when assessing the period from 2018 to 2022 considering the relationship between data usage by our customers on our fixed-line network and the overall energy consumption and CO2 emissions (scope 1 and scope 2), as set out in the table above. Our energy consumption and CO2 emissions decrease during this period, despite the increase in fixed-line customers and fixed-line customer data traffic. We endeavour to run our fixed-line network in as energy efficient manner as we can.

In addition, we consider that by enabling high-speed connectivity we facilitate significant energy savings by end users across many sectors. While we acknowledge that expansion of our fixed-line network and increasing data flows from smart solutions and products may result in additional overall energy demands on telecommunications networks, we believe that the enabled savings outweigh the potential adverse effects of additional network demand.

**Network Expansion**

During the 2018 to 2022 period we have invested in eligible green projects to extend the reach of our fixed-line network, and the high-speed connectivity it provides, to more households (Network Expansion). This Network Expansion has been a multi-year programme beginning in 2015. In addition, we have extended the reach of our network to facilitate the provision of business to business (B2B) services (VMB Network Expansion). The Network Expansion allocations for the period July 2018 to June 2021 are drawn from the look-back period for the Green Bonds issued in July 2021, whereas the Network Expansion allocations for the period July 2021 to December 2021 are drawn from the post issue period.

In the period covered by these allocations, the Network Expansion plan has delivered 233,000 (H2’18), 483,000 (2019), 413,000 (2020), 328,000 (2021) and 494,000 (2022) new gigabit capable connections, respectively. Over this time the cost per premise has reduced from >£800/premise to <£600/premise as build processes have been optimised to reduce construction disruption by using Openreach physical infrastructure where possible, thereby also reducing the environmental impact.

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***Network Capability, Capacity and Life Cycle Management***

In addition to our Network Expansion activity, we have also invested in our existing fixed-line network. This investment includes spend on capability and capacity to meet ongoing, growing demand on the network from existing services. Our spend on the existing fixed-line network also though includes investment in new technology and equipment to implement DOCSIS 3.1 and facilitate the roll out of Gigacity & Gigabit services. In addition, in 2022 this investment includes spend on the full fibre to the premise (FTTP) upgrade of our existing network (see below).

In addition, our investment in our fixed-line network has delivered energy efficiency benefits in a number of areas from the CPE (discussed separately below) through to the core network. This includes spend on energy efficiency in data centres (see “OREO” below), effective life cycle management of electrically powered equipment and improvements in supporting network infrastructure including cooling optimisation (see “Winnersh HVAC replacement” below).

In the course of 2022, we have made the following allocations of eligible spend against the Net Proceeds of the VMED O2 July 2021 Green Bonds:

Network Upgrade

The investment in upgrading our existing fixed-line network includes the completion in December 2021 of our project to provide gigabit connectivity across the whole of our fixed-line network and the 15.6 million premises it passes, underpinned by the roll out of DOCSIS 3.1. This means gigabit speeds are now available to over half of all UK premises, with VMED O2 being the biggest current contributor to the UK Government’s broadband target. Following work to evaluate our spend on our existing Network, including distinguishing between spend on activity and equipment to (i) upgrade the network as compared to (ii) maintain the “as then” speed and capacity, we have in 2022 allocated Network Upgrade spend re (i) as eligible spend against the Net Proceeds of the VMED O2 July 2021 Green Bonds. Spend under (ii) has not been considered eligible.

Certain look-back network spend from 2020 and 2021 remains to be reviewed. As the VMED O2 July 2021 Green Bonds are fully allocated as at 31 December 2022, any eligible spend identified will remain to be set against the net proceeds of any future VMED O2 Green Bond, subject to the look-back period applicable to any such issue.

In July 2021, VMED O2 committed to invest in a full fibre to the premises (FTTP) upgrade of our existing fixed-line network. Deployment of FTTP architecture across all of our existing fixed-line network build to existing premises will support 10gbps symmetrical services and establishes the infrastructure across which future technologies can be deployed at higher speeds and capacities.

Upgrade pilots to FTTP from DOCSIS technology were undertaken in late 2021 and the first quarter of 2022. Following completion of these pilots, VMED O2 has moved to deployment of full fibre across its fixed-line network with completion in 2028. No allocation of eligible spend has been made against the Net Proceeds of the July 2021 Green Bond with regard to this post issue FTTP upgrade activity. As the VMED O2 July 2021 Green Bonds are fully allocated as at 31 December 2022, this eligible spend remains to be set against the net proceeds of any future VMED O2 Green Bond, subject to the look-back period applicable to any such issue.

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21<sup>ST</sup> Century Voice

An example of investment aimed at the delivery of energy efficiency benefits we noted in the VMED O2 Green Bond Framework was our spend to facilitate the roll out of digital fixed-line telephony (VOIP) in place of traditional copper-based systems. Allocations have been made during 2022 for this project, known as 21<sup>ST</sup> Century Voice, covering eligible spend incurred for this project during the look-back period. Activity continues in the post issue period, with the migration of customers through the Digital Voice Switchover getting underway during 2021 and expected to run through to 2025. This migration stage involves a mix of both capital expenditure and operating expense spend. As the VMED O2 July 2021 Green Bonds have been fully allocated as at 31 December 2022, the post issue 21<sup>ST</sup> Century Voice and Digital Voice Switchover eligible spend remains to be set against the net proceeds of any future VMED O2 Green Bond, subject to the look-back period applicable to any such issue.

OREO (Overall Room Energy Optimisation)

OREO was a Network & Technology programme that ran from 2018 through to 2021 as an efficiency project across 130 data centre and technical sites which involved:

- Enhanced Room Cooling Control – the automated capability to only use mechanical cooling when required.
- Technical Room Free Cooling Installation – utilising outside ambient temperature whenever possible.
- Introduction of room level control and enhancing airflow – thermal barriers, rack blanking and tile grilles.

This work delivered direct energy efficiency benefits in terms of reduced power consumption. The allocation made in 2022 relates to spend on this project in the look-back period July 2018 through to June 2021.

Winnersh HVAC replacement

The Winnersh HVAC (Heating, Ventilation, Air Conditioning) replacement is an example of both life cycle management investment and investment in improvements in supporting network infrastructure including cooling optimisation.

The Winnersh data centre has been the subject of three energy efficiency related investments:

- (1) The maintenance replacement of two failing Liquid Chillers in 2017
- (2) Implementation of Fresh Air Cooling to both Data Centres 1 & 2 in 2018
- (3) Replacing the balance of obsolete Cooling Assets in 2019

Overall this programme of works has delivered a substantive energy reduction. Spend on the first element of the programme falls outside the look-back period for the July 21 Green Bonds. To the extent 2018 spend on the second element falls within the look-back period (July 2018 onward), this spend is captured in the separate OREO allocation discussed above. The allocation of eligible spend made under “Winnersh HVAC replacement” covers the 2019 spend on the third element.

This last element of the project replaced poor energy consuming chillers with new dry cooling chillers. The new chillers utilise indirect free cooling rather than utilising mechanical refrigeration. As such, this project delivered an energy saving benefit compared to the old chillers that were replaced.

***Customer Premises Equipment Energy Efficiency***

As at 31 December 2021, the allocations made include investment in CPE over the period from July 2018 to December 2020 related to purchases of four new models of TV set top boxes and wifi modems that were more energy efficient compared to the respective prior model in use (the “Baseline Model”).

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The allocations made in 2022 with regard to the investment in CPE over the period from January 2021 to June 2021 complete the allocation of look-back period eligible spend on the same four models of TV Set top boxes and wifi modems.

In addition to meeting the need for CPE for new customers, a portion of these purchases were to facilitate a programme to swap out existing TV set top boxes in late 2018 and 2019. This swap out, and the spectrum it freed up, was a necessary preparatory step for the Network Upgrade DOCSIS 3.1 roll out. The new V6 set top boxes purchased for the swap out typically used less than half the energy of the Baseline Model TV set top box they replaced. The Virgin 360 TV set top box launched in November 2020 is similarly more energy efficient than the Baseline Model.

The Hub 3 and Hub 4 wifi modems purchased as part of the allocated eligible spend are also more energy efficient than the prior Baseline Model wifi modem when taking increased performance and functionality into account. In addition, the Hub 3 and Hub 4 wifi modems provide circular economy benefits through increased use of recyclable packaging and ease of end of life recycling planned into the design.

In the fourth quarter of 2021, VMED O2 launched its latest, next generation wifi modem, called Hub 5, which comes with WiFi 6, the latest generation of wireless technology that brings faster and more reliable speeds. The Hub 5 product casing is built from 100% postconsumer recycled plastic. In April 2022, VMED O2 launched its Stream set top box allowing customers to bring together their entertainment subscriptions and free TV channels on one device, underpinned by VMED O2's connectivity. While both these CPE are expected to deliver energy efficiency benefits, as the VMED O2 July 2021 Green Bonds are fully allocated as at 31 December 2022, any eligible spend on these CPE remains to be set against the net proceeds of any future VMED O2 Green Bond, subject to the look-back period applicable to any such issue.

Given the CPE are located in use at the customer's premise, energy efficiency benefits on CPE serve to reduce VMED O2's Scope 3 emissions and contribute to our broader decarbonisation objective of net zero by 2040 across our full value chain, including our operations, products and supply chain. These CPE remain the property of VMED O2 and are returned when customers disconnect from our services. CPE related allocations to date total £232.5 million (2021) and £23.7 million (2022) = £ 256.2 million, 15.2% of the £1,689.1 million of the VMED O2 July 2021 Green Bonds (which as the only current issue also = cumulative Green Bond Net Proceeds).

In the period 1 July 2018 to 31 December 2021, VMED O2 has issued to customers 2,273,300 Hub 3 wifi modems, 383,300 Hub 4 wifi modems, 1,393,800 V6 set top boxes and 281,600 Virgin 360 TV set top boxes.

**Circular Economy for CPE**

Eligible spend under the Circular Economy category of the VMED O2 Green Bond Framework includes the cost of "Electrical product take-back, repair and refurbishment to enable the reuse of customer products". The allocations above include CPE Screen and Refurbishment costs from the post issue period for the July 2021 Green Bond issue, i.e. July 2021 to June 2022.

When a customer disconnects from our fixed-line network services and returns our CPE, we will examine the CPE to determine if it can be re-used and, depending upon the outcome, either refurbish and repackage the CPE such that it can be (re)issued to a new customer or send the CPE for recycling.

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Following the revision of the VMED O2 Green Bond Framework in August 2022 and the expansion of the Green Bond Framework's scope to include mobile network related activity, we expect to find eligible spend of a similar nature in the mobile network operations with regard to handsets and other hand held devices. As the VMED O2 July 2021 Green Bonds are fully allocated as at 31 December 2022, this eligible spend remains to be set against the net proceeds of any future VMED O2 Green Bond, subject to the look-back period applicable to any such issue.

See the table below for the metrics we consider to monitor the environmental impact of our CPE screening:

	2022	2021	2020	2019	2018
CPE Returned	2,068,298	1,635,335	1,506,406	1,871,158	1,966,608
Reduction (increase) in CPE awaiting screening	257,265	90,774	198,061	(117,069)	68,346
Total CPE - Refurbished for use / sent for Recycling	(1) 1,811,033	1,726,109	1,704,467	1,754,089	2,034,954
CPE Refurbished for use	1,316,267	1,440,325	1,317,150	1,163,298	913,684
CPE sent for Recycling	494,766	285,784	387,317	590,791	1,121,270
% of total refurbished	73%	83%	77%	66%	45%
% of total sent for recycling	27%	17%	23%	34%	55%

(1) KPMG, our independent assurance provider, has provided limited assurance over the selected information in this table denoted by the symbol (1) using the assurance standard ISAE (UK) 3000. See the separate "KPMG Limited Assurance Report to VMED O2 Limited on Use of Green Bond Proceeds and 2022 Impact Reporting metrics as at and for the year ended 31 December 2022" available on the Corporate Statements section of the Virgin Media O2 Corporate website.

The higher proportion of CPE sent for recycling in 2018 and 2019 reflects the programme to swap out TV set top boxes and replace them with V6 boxes as referred to above (See *Energy use and CO2 Emissions of the Fixed-line Network – Customer Premises Equipment Energy Efficiency*).

### Clean Transport

The VMED O2 Green Bond Framework sets out two areas of expected eligible spend being the cost of:

- switching the van fleet of around 3,385 vans to electric vans, and
- moving the business needs car fleet of around 730 vehicles to electric or hybrid vehicles, the latter to comply with a 50gCO<sub>2</sub>/km threshold

While the first orders for electric vehicles had been placed as at 31 December 2021, the only electric vehicle on hand was a trial vehicle. Deliveries during 2022 mean that as at 31 December 2022 we have 169 electric vehicles out of a total fleet of 4,100. Percentage of electric vehicles out of total owned and leased vehicle fleet at most recent year end was 4%<sup>(1)</sup>.

(1) KPMG, our independent assurance provider, has provided limited assurance over the selected information in this table denoted by the symbol (1) using the assurance standard ISAE (UK) 3000. See the separate "KPMG Limited Assurance Report to VMED O2 Limited on Use of Green Bond Proceeds and 2022 Impact Reporting metrics as at and for the year ended 31 December 2022" available with this Progress Report on the Responsible Business section of the Virgin Media O2 Corporate website.

The intent, subject to the availability of electric vehicles, is to replace the current van fleet with electric vehicles as the lease periods on the existing vehicles come to their scheduled end. We have outstanding orders as at 31 December 2022 for a further 270 electric vans.

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VMED O2 is in the process of implementing a change in the renewal options for new business needs cars to a full electric vehicle. Around 600 business needs cars are either ready for renewal or due to be in 2023.

To date no cost for electric and qualifying hybrid vehicles has been allocated as eligible spend. As the VMED O2 July 2021 Green Bonds are fully allocated as at 31 December 2022, this eligible spend remains to be set against the net proceeds of any future VMED O2 Green Bond, subject to the look-back period applicable to any such issue.

## **External Assurance**

We engaged KPMG to undertake independent limited assurance, reporting to VMED O2 UK Limited, using the assurance standards International Standard on Assurance Engagements (UK) 3000 – ‘Assurance Engagements other than Audits or Reviews of Historical Financial Information’ (‘ISAE (UK) 3000’) for (i) the Use of Green Bond Proceeds and (ii) for selected environmental Impact Reporting metrics for the year ended 31 December 2022 (the Selected Information). KPMG’s Assurance Report on this engagement is available with this Progress Report on the Responsible Business section of the Virgin Media O2 Corporate website. KPMG has issued an unqualified assurance opinion.

The level of assurance provided for in a limited assurance engagement is lower than a reasonable assurance engagement. In order to reach their reported conclusions for both this engagement, KPMG performed a range of procedures, a summary of which is included within the engagement’s limited assurance report.

Non-financial performance information, GHG quantification in particular, is subject to more inherent limitations than financial reporting. It is important to read the Selected Information in the context of the full KPMG limited assurance statement on the Selected Information and VMED O2’s reporting criteria as set out in Appendix 2 to the limited assurance report and as available on VMED O2’s website (see “Impact Reporting” above).






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**Extract from VMED O2 Green Bond Framework: VMED O2 Eligible Green Projects**

Under the VMED O2 Green Bond Framework issued August 2022, VMED O2 uses Green Bonds to finance Eligible Green Projects of VMED O2 (“VMED O2 Eligible Green Projects”) that support VMED O2’s transition to a net zero carbon and zero waste future for the UK.




Following the VMED O2 Green Bond Framework, and the ICMA Green Bond Principles (“GBP”) it incorporates, refinancing of VMED O2 Eligible Green Projects will have a look-back period of no longer than 36 months from the time of issuance. The net proceeds or an amount equal to the net proceeds raised through any green bonds will be allocated to the financing and refinancing of VMED O2 Eligible Green Projects as defined in the VMED O2 Green Bond Framework.

A list of VMED O2 Eligible Green Projects that may be considered by VMED O2 per the VMED O2 Green Bond Framework is shown below, together with the category per the GBP (“GBP category”) and the alignment to the Sustainable Development Goals (“SDG”) adopted by the United Nations:

<b>GB Principles category</b>	<b>VMED O2 Eligible Green Projects</b>	<b>SDG Alignment</b>
Energy efficiency	<p>Network transformation (fixed-line &amp; mobile) that result in energy efficiency as set out below. This list may be further updated as technologies and other circumstances evolve.</p> <ul style="list-style-type: none"> <li>• Rollout of full-fibre and fibre-rich networks, implementing DOCSIS<sup>(1)</sup> 3.1, and investment in mobile 4G &amp; 5G networks to underpin the UK’s digital revolution and connectivity, enabling smart cities, smart homes and smart transport systems</li> <li>• Achieving target of PUE &lt;1.5 for data centres through our data centre energy efficiency and free cooling programme known as OREO (overall room energy optimisation)</li> <li>• Rolling out digital fixed-line telephony (VOIP) in place of traditional copper-based systems, driving energy efficiencies</li> <li>• LED swap-outs in technical and people sites</li> <li>• Virtualisation of network delivering energy efficiency benefits</li> <li>• Electrical power monitoring systems for the network</li> <li>• Improvements in supporting network infrastructure, including cooling optimisation, smart management, intelligent lighting, automation maintenance</li> <li>• Effective Life Cycle management of electrically powered Network, Technical site and IT assets</li> </ul> <p>Purchase of more power efficient Customer Premises Equipment (CPE) compared to baseline prior models (CPE purchases also drive Circular Economy benefits including (i) increasing the recycled content in manufacture and (ii) maximising end of life recycling).</p>	  

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Energy Efficiency (continued)	<p>Finance the development and implementation of products and services based on Internet of Things, big data and/or artificial intelligence, which aim at energy efficiency and conservation of natural resources. Potential technologies include financing of hardware, software and innovation, such as:</p> <ul style="list-style-type: none"> <li>• New IoT connectivity with technologies including Narrowband-IoT, which is a Low Power Wide Area (“LPWA”) network technology and can facilitate increase energy efficiency, improve network coverage and enhance the duration of batteries.</li> </ul> <p>Excluding any applications for fossil fuel technologies</p>	
Renewable energy <sup>(2)</sup>	<ul style="list-style-type: none"> <li>• On-site renewable power generation from sources such as solar and wind to reduce grid dependency and increase security of supply e.g. solar PV installations on technical sites</li> </ul>	
Clean transportation	<ul style="list-style-type: none"> <li>• Switching fleet to electric vehicles and hybrid vehicles that comply with a 50gCO<sub>2</sub>/km threshold (fleet over 4,000 vehicles at 31 December 2021).</li> <li>• Electric vehicle charging points at offices and at other sites with staff.</li> </ul>	
Circular economy adapted products, production technologies and processes	<ul style="list-style-type: none"> <li>• Electrical product take-back, repair and refurbishment to enable the reuse of customer products</li> </ul>	

(1) DOCSIS - Data Over Cable Service Interface Specification

(2) Where VMED O2 controls the bill, it purchases 100% of the power for its mobile and fixed-line network from renewable sources. These ongoing operating expenses are not considered eligible expenditure. If and when VMED O2 enters into medium to long term power purchase agreements (PPA) that support the construction of incremental generating capacity, this position may be re-assessed.

The SDG noted above are:

- 7 Affordable and Clean Energy,
- 9 Industry, Innovation and Infrastructure,
- 11 Sustainable Cities and Communities, and
- 12 Responsible Consumption and Production

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