



Second-Party Opinion

Virgin Media O2 Green Bond Framework

Evaluation Summary

Sustainalytics is of the opinion that the Virgin Media O2 Green Bond Framework is credible and impactful and aligns with the four core components of the Green Bond Principles 2021. This assessment is based on the following:



USE OF PROCEEDS The eligible categories for the use of proceeds – Energy Efficiency, Renewable Energy, Clean Transportation, Circular Economy Adapted Products, Production Technologies and Processes – are aligned with those recognized by the Green Bond Principles. Sustainalytics considers that investments in the eligible categories are expected to lead to positive environmental impacts and advance the UN Sustainable Development Goals, specifically SDGs 7, 9, 11 and 12.



PROJECT EVALUATION / SELECTION Virgin Media O2’s Environmental Steering Committee oversees the selection of eligible projects, while its Green Bond Sub-Group reviews and evaluates eligible projects. Virgin Media O2 has adopted internal policies and procedures to address environmental and social risks associated with projects being financed under the Framework. Sustainalytics considers these risk management systems to be adequate and the project selection process in line with market practice.



MANAGEMENT OF PROCEEDS Virgin Media O2’s Green Bond Registrar will monitor and track the allocation of proceeds using an internal green bond register. Virgin Media O2 intends to fully allocate proceeds within 36 months of issuance. Pending allocation, unallocated proceeds will be held in line with the Virgin Media O2’s standard liquidity management practices. This is in line with market practice.



REPORTING Virgin Media O2 intends to report on the allocation of proceeds and impact metrics on its website on an annual basis until full allocation. Allocation reporting will include the amount of proceeds allocated by eligible category, the share of financing versus refinancing and the balance of unallocated proceeds. In addition, Virgin Media O2 is committed to reporting on relevant impact metrics. Sustainalytics views Virgin Media O2’s allocation and impact reporting as aligned with market practice.

Evaluation Date	August 5, 2022 ¹
Issuer Location	London, United Kingdom

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¹ This document is an update of a Second-Party Opinion originally published in June 2021.

Introduction

VMED O2 UK Limited (“Virgin Media O2”, “VMED O2” or the “Joint Venture”) is a provider of integrated telecommunication services, including broadband, mobile, TV, home phone and other services in the United Kingdom, where it employs approximately 18,000 people and has more than 425 retail stores. VMED O2 was formed in June 2021 as a 50:50 joint venture between Liberty Global plc’s Virgin Media Inc. (“Virgin Media”) and Telefonica S.A.’s O2 Holdings Limited (“O2”) to combine their respective Virgin Media and O2 branded operations in the United Kingdom.

VMED O2 has developed the Virgin Media O2 Green Bond Framework dated August 2022 (the “Framework”) under which VMED O2 UK Financing I PLC (the “Issuer”), an indirect wholly owned subsidiary of Joint Venture, intends to issue green bonds and use the proceeds to finance or refinance projects expected to support the decarbonization of VMED O2’s operations and contribute to the net zero transition in the UK. The Framework defines eligibility criteria in four areas:

1. Energy Efficiency
2. Renewable Energy
3. Clean Transportation
4. Circular Economy Adapted Products, Production Technologies and Processes

VMED O2 UK Financing I PLC engaged Sustainalytics to review the Framework and provide a Second-Party Opinion on the Framework’s environmental credentials and its alignment with the Green Bond Principles 2021 (GBP).² The Framework will be available in a separate document.³

Scope of work and limitations of Sustainalytics’ Second-Party Opinion

Sustainalytics’ Second-Party Opinion reflects Sustainalytics’ independent⁴ opinion on the alignment of the reviewed Framework with the current market standards and the extent to which the eligible project categories are credible and impactful.

As part of the Second-Party Opinion, Sustainalytics assessed the following:

- The Framework’s alignment with the Green Bond Principles 2021, as administered by ICMA;
- The credibility and anticipated positive impacts of the use of proceeds; and
- The alignment of the issuer’s sustainability strategy and performance and sustainability risk management in relation to the use of proceeds.

For the use of proceeds assessment, Sustainalytics relied on its internal taxonomy, version 1.11, which is informed by market practice and Sustainalytics’ expertise as an ESG research provider.

As part of this engagement, Sustainalytics held conversations with various members of VMED O2’s management team to understand the sustainability impact of its business processes and planned use of proceeds, as well as the management of proceeds and reporting aspects of the Framework. VMED O2 representatives have confirmed that: (1) they understand it is the sole responsibility of VMED O2 to ensure that the information provided is complete, accurate and up to date; (2) they have provided Sustainalytics with all relevant information; and (3) that any provided material information has been duly disclosed in a timely manner. Sustainalytics also reviewed relevant public documents and non-public information.

This document contains Sustainalytics’ opinion of the Framework and should be read in conjunction with that Framework.

Any update of the present Second-Party Opinion will be conducted according to the agreed engagement conditions between Sustainalytics and the Issuer.

² The Green Bond Principles are administered by the International Capital Market Association and are available at <https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/>.

³ The Virgin Media O2 Green Bond Framework is available on VMED O2’s website at: <https://news.virginmediao2.co.uk/responsible-business/https://news.virginmediao2.co.uk/responsible-business/>

⁴ When operating multiple lines of business that serve a variety of client types, objective research is a cornerstone of Sustainalytics and ensuring analyst independence is paramount to producing objective, actionable research. Sustainalytics has therefore put in place a robust conflict management framework that specifically addresses the need for analyst independence, consistency of process, structural separation of commercial and research (and engagement) teams, data protection and systems separation. Last but not the least, analyst compensation is not directly tied to specific commercial outcomes. One of Sustainalytics’ hallmarks is integrity, another is transparency.

Sustainalytics' Second-Party Opinion, while reflecting on the alignment of the Framework with market standards, is no guarantee of alignment nor warrants any alignment with future versions of relevant market standards. Furthermore, Sustainalytics' Second-Party Opinion addresses the anticipated impacts of eligible projects expected to be financed with bond proceeds but does not measure the actual impact. The measurement and reporting of the impact achieved through projects financed under the Framework are the responsibility of the Framework owner. Upon 24 (twenty-four) months following the evaluation date set stated herein, VMED O2 is encouraged to update the Framework, if necessary, and seek an update to this Second-Party Opinion to ensure ongoing alignment of the Framework with market standards and expectations.

In addition, this Second-Party Opinion opines on the potential allocation of proceeds but does not guarantee their realized allocation towards eligible activities.

No information provided by Sustainalytics under the present Second-Party Opinion shall be considered as being a statement, representation, warrant or argument, either in favour or against the truthfulness, reliability or completeness of any facts or statements and related surrounding circumstances that VMED O2 may have made available to Sustainalytics for the purpose of this Second-Party Opinion.

Sustainalytics' Opinion

Section 1: Sustainalytics' Opinion on the Virgin Media O2 Green Bond Framework

Sustainalytics is of the opinion that the Framework is credible and impactful, and aligns with the four core components of the GBP. Sustainalytics highlights the following elements of the Framework:

- Use of Proceeds:
 - The eligible categories – Energy Efficiency, Renewable Energy, Clean Transportation, Circular Economy Adapted Products, Production Technologies and Processes – are aligned with those recognized by the GBP.
 - VMED O2 has defined a look-back period of 36 months, which Sustainalytics considers to be aligned with market practice.
 - Under the Energy Efficiency category, VMED O2 may finance activities aimed at reducing the energy consumption of its operations and network infrastructure (both mobile and fixed-line), as well as products and solutions aimed at improving the energy efficiency and reducing the GHG emissions of the Joint Venture's products and services.
 - VMED O2 intends to invest in network transformation projects, such as: (i) rollout of full-fibre and fibre-rich networks; (ii) implementing data over cable service interface specification (DOCSIS) 3.1;⁵ and (iii) 4G and 5G infrastructure.
 - VMED O2 has indicated that the PUE values of existing data centres vary and that cooling improvements intend to push the PUE below 1.5, while any investments in new data centres are planned with a PUE below 1.5. Sustainalytics considers data centres with a PUE of 1.5 or below as aligned with market practice and notes positively that VMED O2 (i) procures renewable energy to power the data centres (and its whole network); and (ii) uses free cooling technology that takes advantage of cool ambient conditions and reduces the need for mechanical cooling and associated power.
 - VMED O2 may contemplate investments in the purchase of customer premises equipment (CPE), such as Wi-Fi modems and TV boxes to deliver its broadband or TV services. The Company has disclosed to Sustainalytics that investments in CPEs under the Framework are aimed at gradually upgrading legacy equipment, and part of its broader decarbonization strategy to reduce its scope 3 emissions. These CPE models present substantial energy efficiency gains compared to the baseline prior models,⁶ however, Sustainalytics is of the opinion that technologies or products financed under

⁵ Heavy Reading whitepaper, "DOCSIS 3.1: Cable Tackles the Gigabit Challenge" at: <https://www.veexinc.com/assets/uploads/microsites/docsis31/HR%20DOCSIS%203.1%20Initiative%20WP%202-16-16.pdf>

⁶ Wi-Fi modems and TV boxes are expected to be approximately 15-50% and 50% respectively more energy efficient during usage compared to the baseline prior models of Wi-Fi Modem and TV box (i.e. Hub2 and TIVO STB).

- the Energy Efficiency category must be specifically dedicated to enabling energy efficiency. Sustainalytics encourages the Joint Venture to report on the energy efficiency gains or avoided emissions achieved through financing of such devices.
- VMED O2 intends to invest in network development projects including the modernization and expansion of its broadband and fixed-line telephony network through fibre optics. To modernize and improve the energy efficiency of the telephony network, VMED O2 intends to finance VOIP to replace copper-based network. Additionally, VMED O2 may finance the expansion of its broadband network through fibre optics. Fixed lined telephony, data and TV will therefore be transmitted through fibre optics over a single network. Sustainalytics considers that upgrading and transitioning to fibre optic networks can lead to energy efficiency gains compared to copper-based networks as a baseline.
 - VMED O2 intends to finance expenditures on network virtualization to combine hardware and software network resources and functionality into a single, software-based network. These expenditures may include replacing the use of multiple servers in data centres and separating hardware and software to centralize functions into larger, more scalable and energy-efficient facilities. Such investments may not always generate energy efficiency benefits given the wide range of potential activities that may qualify under network virtualization, however, Sustainalytics notes that VMED O2 has committed to allocate proceeds to specific activities expected to provide energy efficiency gains. Sustainalytics further encourages the Joint Venture to report on estimated or achieved energy efficiency gains.
 - VMED O2 may finance more energy-efficient equipment to replace high energy-consuming ones, as part of the effective life cycle management of networks, technical sites and IT assets. Other projects financed under this category include the installation of LED lights and network power monitoring systems. VMED O2 has confirmed that fossil fuel powered equipment will be excluded.
 - VMED O2 may finance the development and implementation of products and services based on internet of things (IoT), big data and artificial intelligence. VMED O2 has confirmed to Sustainalytics that the financing of such products and services will be limited to those that are primarily intended to increase energy efficiency and conservation of natural resources. Potential technologies include financing of a new IoT connectivity with technologies including narrowband-IoT.⁷ Narrowband-IoT is a low-power wide area network technology that facilitates energy efficiency improvement, network coverage improvement and the enhancement of battery duration. In addition, projects and services related to fossil fuel production and fossil fuel technologies will be excluded.
 - Sustainalytics recognizes that by enabling high-speed network connectivity, VMED O2's solutions and products have the potential to support significant energy savings by end users across many sectors. Sustainalytics also acknowledges that the expansion of full-fibre networks and increasing data flows from smart solutions and products may result in additional overall energy demands on telecommunications networks. Overall, Sustainalytics believes that the enabled savings outweigh the potential adverse effects of additional network demands (see Section 3, for additional detail).
- In the Renewable Energy category, VMED O2 may finance the installation of on-site renewable energy, such as solar PV and wind projects. Sustainalytics considers this as aligned with market practice.
 - Under the Clean Transportation category, VMED O2 may finance the sourcing of electric and hybrid vehicles with emissions below 50 gCO₂/km and associated infrastructure, including electric vehicle charging stations.⁸
 - Sustainalytics notes that expenditures under this category may include the leasing costs of electric and hybrid vehicles.⁹ Sustainalytics considers market practice the financing of capital and financial leases that result in ownership (i.e. capex). Sustainalytics notes that operating leases, as contemplated by the Joint Venture, do

⁷ GSMA, "Narrowband-Internet of Things", (2020), at: <https://www.gsma.com/iot/narrow-band-internet-of-things-nb-iot/>

⁸ VMED O2 has confirmed that the parking spots will not be financed as electric vehicle charging stations.

⁹ VMED O2 has indicated that it will allocate less than 10% of the proceeds to the leasing costs of hybrid and electric vehicles.

not necessarily result in the purchase of an asset (i.e. opex). VMED O2 has indicated that short-term operating leases allow quicker fleet turnover to bring more sustainable vehicle models into its fleet. The types of the vehicles contemplated are fit for inclusion in green bonds and could reduce the emissions associated with the operation of the Joint Venture's fleet, however, Sustainalytics notes that operating leases represent a deviation from market practice.

- As part of the Circular Economy Adapted Products, Production Technologies and Processes category, VMED O2 may finance initiatives to increase the reuse of electrical products such as Wi-Fi routers, TV boxes and handsets, including product take-back, refurbishment and repair.
- Project Evaluation and Selection:
 - VMED O2's Environmental Steering Committee (the "Committee") consisting of senior representatives from relevant operational teams and supported by the Joint Venture's Sustainability and Finance teams oversees the selection of eligible projects. The Committee has delegated its authority in reviewing and approving eligible projects to the Green Bond Sub-Group, which is formed by members from the Committee, VMED O2's Green Bond Registrar and a representative from VMED O2's Treasury.
 - Virgin Media O2 has in place an environmental and social risk management process to ensure that all eligible assets comply with its internal risk management policies. For additional details, refer to Section 2.
 - Based on the establishment of a formal committee and the presence of risk management processes, Sustainalytics considers this process to be in line with market practice.
- Management of Proceeds:
 - The Green Bond Registrar, a member of the finance team, will be responsible for overseeing the allocation process. The Joint Venture will manage the proceeds on a portfolio basis and track allocation through an internal Green Bond Register. VMED O2 intends to fully allocate bond proceeds within 36 months after issuance. Pending allocation, unallocated proceeds will be held in line with the Joint Venture's liquidity management practices.
 - Based on the use of a tracking system and disclosure of temporary use of proceeds, Sustainalytics considers this process to be in line with market practice.
- Reporting:
 - VMED O2 intends to report on the allocation of proceeds on its website on an annual basis until full allocation. Allocation reporting will include the amount of proceeds allocated by eligible category, the share of financing vs. refinancing, and the balance of unallocated proceeds. Regarding impact reporting, VMED O2 intends to report on relevant impact indicators such as tCO₂e (scope 1 and 2) per terabyte data for fixed-line and mobile networks, tCO₂e (scope 1 and 2) per fixed-line customer and mobile connection, and annual GHG emissions reduced or avoided in tCO₂e. For a full list of impact indicators, see Appendix 1.
 - Based on the commitment to both allocation and impact reporting, Sustainalytics considers this process to be in line with market practice.

Alignment with Green Bond Principles 2021

Sustainalytics has determined that the Virgin Media O2 Green Bond Framework aligns with the four core components of the GBP. For detailed information, please refer to Appendix 1: Green Bond/Green Bond Programme External Review Form.

Section 2: Sustainability Performance of VMED O2

Contribution of framework to VMED O2's sustainability strategy

Sustainalytics is of the opinion that VMED O2 demonstrates a commitment to sustainability by incorporating ESG principles into its core business activities. Following its formation, VMED O2 established a new sustainability strategy, the Better Connections Plan, focusing on four areas: (i) enabling a zero-carbon future, (ii) accelerating a circular economy, (iii) connecting the disconnected communities, and (iv) building a better

business relationship throughout the value chain.¹⁰ Sustainalytics highlights the Joint Venture's efforts on the environmental impact pillar due to its relevance to the projects that may be financed under the Framework.

VMED O2 has set a target to become climate neutral throughout its operations, products and supply chain by 2040 in line with the Science Based Target initiative's Net Zero Standard.¹¹ This is supported by two interim targets: (i) reducing scope 1 and 2 emissions by 60% and scope 3 emissions by 25% by 2025, and (ii) reducing scope 1 and 2 emissions by 90% and scope 3 emissions by 50% by 2030.^{12,13} In order to achieve its climate-related goals, VMED O2 is implementing energy efficiency solutions and sourcing renewable power as follows. Regarding energy efficiency, VMED O2 aims to avoid 20 million tCO₂ emissions by the end of 2025, compared to 2020 levels. In addition, the Joint Venture intends to reduce its supply chain emissions by focusing on the life cycle impact of its products and collaborating with suppliers to adopt carbon-reduction plans. As for renewable power, VMED O2 has set a target of sourcing 100% renewable electricity to power its network. The transition to electric vehicles will also support VMED O2's operational emissions reduction target.

Within its "accelerating a circular economy" pillar, VMED O2 is committed to ensuring that over 95% of all potential waste created by its business is reused or recycled by the end of 2025.¹⁴ In addition, also by year-end 2025, the Joint Venture committed to have 100% of new broadband and TV products being manufactured from recycled plastic, 100% of returned broadband and TV products to be reused or recycled, and 100% of customer packaging to be recycled, and without single-use plastic.¹⁵ Also by 2025, VMED O2 expects to carry out 100 million circular economy single actions, such as through repairing, recycling, reselling and refurbishing units seeking to reduce e-waste.¹⁶

Given the above context, Sustainalytics is of the opinion that the Virgin Media O2 Green Bond Framework is aligned with VMED O2's overall sustainability strategy and initiatives and will further the Joint Venture's action on its key environmental priorities.

Approach to managing environmental and social risks associated with the projects

Sustainalytics recognizes that the net proceeds from the bonds issued under the Framework will be directed towards eligible projects that are expected to have positive environmental impact. However, Sustainalytics is aware that such eligible projects could also lead to negative environmental and social outcomes. Some key environmental and social risks possibly associated with the eligible projects could include issues involving waste, land use and biodiversity issues associated with network infrastructure, supply chain risks, data privacy and security, as well as health and safety risks associated with telecommunication network infrastructure construction and maintenance.

Sustainalytics is of the opinion that Virgin Media O2 is able to manage or mitigate potential risks through implementation of the following:

- Regarding environmental risks such as waste, land use and biodiversity issues associated with network infrastructure, VMED O2 has implemented an environmental management system certified by ISO 14001. Additionally, under its environmental policy, despite operating in the UK and being formed post-Brexit, VMED O2 follows the European Commission's Waste from Electrical and Electronic Equipment Directive which aims to prevent the generation of electronic waste and contribute to the efficient use of resources and retrieval of secondary raw materials through reuse, recycling, and other forms of recovery.^{17,18}
- Virgin Media O2 manages supply chain risks through its Supplier Code of Conduct and Quality and Sustainability Schedules.¹⁹ These policies combined with contract requirements set guidelines for suppliers to comply with applicable environmental regulations, relevant ethical, social and

¹⁰ Virgin, "Virgin Media O2 launches Better Connections Plan", (2022), at: <https://www.virgin.com/about-virgin/latest/virgin-media-o2-launches-better-connections-plan>

¹¹ VMED O2, "We're supercharging our journey to net zero", at: <https://news.virginmediao2.co.uk/wp-content/uploads/2022/04/Net-Zero-Virgin-Media-O2.pdf>

¹² All of the targets are against a 2020 baseline.

¹³ Ibid.

¹⁴ VMED O2, "Creating a Circular Economy", at: <https://news.virginmediao2.co.uk/responsible-business/creating-a-circular-economy/>

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ European Commission, "Waste from Electrical and Electronic Equipment (WEEE)", at: https://environment.ec.europa.eu/topics/waste-and-recycling/waste-electrical-and-electronic-equipment-weee_en

¹⁸ Virgin Media, "Environment Policy Statement", (2017), at: <https://www.virginmedia.com/content/dam/virginmedia/dotcom/documents/corporate/environment-policy-statement-2017.pdf>

¹⁹ Provided by Virgin Media O2 to Sustainalytics confidentially.

responsible criteria, and international conventions and standards such as the ILO conventions, OECD guidelines, and ISO criteria.

- To address data privacy and security, Virgin Media and O2 have implemented privacy policies according to the UK Data Protection Act 1998,^{20,21,22} which ensure compliance with international standards and British legislation regarding the protection of personal data, user privacy and confidentiality and security of personal data.
- Regarding risks related to the health and safety of employees and contractors, Virgin Media has a dedicated Health and Safety Governance Committee in place entrusted with the responsibility to monitor the implementation of health and safety measures, review progress and escalate health and safety issues.²³ In addition, Virgin Media requires its suppliers to provide their employees with a safe and healthy workplace, and that appropriate policies and procedures are in place to ensure worker health and safety,²⁴ including complying with health and safety legislation and codes of practice. O2 has also implemented health and safety policies to ensure healthy and safe working conditions for its employees and contractors, avoiding future harms by reporting, investigating and reviewing incidents.²⁵

Based on these policies, standards and assessments, Sustainalytics is of the opinion that Virgin Media O2 has implemented adequate measures and is well positioned to manage and mitigate environmental and social risks commonly associated with the eligible categories.

Section 3: Impact of Use of Proceeds

All four use of proceeds categories are aligned with those recognized by the GBP. Sustainalytics has focused on one below where the impact is specifically relevant in the local context.

Importance of energy-efficient network and technology in the telecommunication sector

The telecom sector accounts for approximately 3-4% of global GHG emissions, and its absolute emissions volume is expected to increase due to growing digitalization, increasing consumer demand, and widespread use of smart devices.²⁶ By 2040, the ICT sector is expected to account for 14% of global emissions, with data centres accounting for 45% of those, telecom networks 24%, and end-user equipment for 31%.²⁷ Current mobile networks use approximately 15% of the energy they consume to transfer data, where the remaining 85% is lost due to the heat loss in power amplifiers, intermittent equipment operation and inefficient network infrastructure, which includes rectifiers, cooling systems and battery units.²⁸ As most emissions of the telecom sector come from energy consumption, it is estimated that energy efficiency measures may reduce energy-related GHG emissions by 40% over the next two decades.²⁹

In 2020, with the release of the sectoral science-based pathway, the telecom sector committed to achieving net zero carbon emissions by 2050.³⁰ This sectoral pathway will increase the need for digitalization and implementation of energy efficiency measures, requiring significant investment to develop energy-efficient solutions, automation of systems, and remote energy monitoring systems, amongst others. A recent study by the European Commission indicated fibre as the most energy-efficient technology for broadband access networks, with fibre networks consuming 56 kWh compared to 88 kWh for DOCSIS, when performing at

²⁰ Virgin Media, "Virgin Media's Privacy Policy, at: <https://www.virginmedia.com/legal/privacy-policy>

²¹ O2, "Our Privacy Policy", at: <https://www.o2.co.uk/termsandconditions/privacy-policy>

²² Legislation.gov.uk, "Data Protection Act 1998", at: <https://www.legislation.gov.uk/ukpga/1998/29/contents>

²³ Virgin Media, "Health and Safety Policy" (2020), provided confidentially.

²⁴ Virgin Media, "Virgin Media Supplier Code of Conduct 2021", at:

https://www.virginmedia.com/content/dam/virginmedia/dotcom/documents/corporate/Virgin_Media_Code_of_Conduct.pdf

²⁵ O2, "Safety is everyone's Business", at: https://static.o2.co.uk/www/docs/health_and_safety_policy_notice_final.pdf

²⁶ BCG, "Putting Sustainability at the Top of the Telco Agenda", at:

<https://www.bcg.com/en-in/publications/2021/building-sustainabletelecommunications-companies>

²⁷ European Commission, "Supporting the Green Transition", (2020), at:

https://ec.europa.eu/commission/presscorner/api/files/attachment/862091/Supporting_the_green_transition_en.pdf.pdf

²⁸ McKinsey & Company, "The case for committing to greener telecom networks", (2020), at:

<https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/the-case-for-committing-to-greener-telecom-networks?cid=e-ml-web>

²⁹ International Energy Association, "Energy Efficiency 2020", at: https://iea.blob.core.windows.net/assets/59268647-0b70-4e7b-9f78-269e5ee93f26/Energy_Efficiency_2020.pdf

³⁰ United Nations Climate Change, "Telecoms Sector Agrees Pathway to Net Zero Emissions", at:

<https://unfccc.int/news/telecoms-sector-agrees-pathway-to-net-zero-emissions>

50 Mbps.³¹ This translates to a carbon emission equivalent of 1.7 tonnes for fibre relative to 2.7 tonnes for DOCSIS. In addition, as a network enabler, IoT interconnects devices, software and data to further enable improvements in efficiency and reliability as well as enhance overall energy efficiency for end users.³²

To accelerate the low-carbon transition, the UK Government committed to a net zero target by 2050 with a mid-term climate goal to reduce emissions by 78% by 2035 compared to 1990 levels.³³ Additionally, in 2018, the UK Government set a target for full-fibre broadband to reach 15 million premises by 2025, with nationwide coverage by 2033.³⁴

Given the positive environmental impacts of full-fibre broadband and IoT highlighted above, Sustainalytics notes that the projects to be funded under the Framework are expected to contribute to the UK meeting its climate and coverage targets.

Alignment with/contribution to SDGs

The Sustainable Development Goals were adopted in September 2015 by the United Nations General Assembly and form part of an agenda for achieving sustainable development by the year 2030. The bonds issued under the Virgin Media O2 Green Bond Framework are expected to help advances the following SDGs and targets:

Use of Proceeds Category	SDG	SDG target
Energy Efficiency	7. Affordable and Clean Energy 9. Industry, Innovation and Infrastructure	7.3 By 2030, double the global rate of improvement in energy efficiency 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
Renewable Energy	7. Affordable and Clean Energy	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix
Clean Transportation	11. Sustainable Cities and Communities	11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons
Circular Economy Adapted Products, Production Technologies and Processes	12. Responsible Consumption and Production	12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

³¹ European Commission, "Shaping Europe's digital future", (2020), at: <https://digital-strategy.ec.europa.eu/en/library/fibre-most-energy-efficient-broadband-technology#:~:text=A%20study%20launched%20in%202017,%2C%20DSL%2C%20vectoring%20and%20DOCSIS.>

³² Mukhopadhyay, S. C., Suryadevara. N. K. (2014), "Internet of Things: Challenges and Opportunities", at: <https://researchers.mq.edu.au/en/publications/internet-of-things-challenges-and-opportunities>

³³ UK Climate Change Committee report, "The Sixth Carbon Budget", at: <https://www.theccc.org.uk/publication/sixth-carbon-budget/>

³⁴ UK Parliament, The Digital, Culture, Media and Sport Committee, "Broadband and the road to 5G", "The Government's targets and funding for digital connectivity", (2020) at: <https://publications.parliament.uk/pa/cm5801/cmselect/cmcmds/153/15306.htm>

Conclusion

VMED O2 has developed the Virgin Media O2 Green Bond Framework under which VMED O2 UK Financing I PLC may issue green bonds. VMED O2 intends to use the proceeds from these bonds to finance projects related to energy efficiency, renewable energy, clean transport, and circular economy adapted products, production technologies and processes. Sustainalytics considers that the projects funded by the green bond proceeds are expected to contribute to the decarbonization of VMED O2's operations.

The Virgin Media O2 Green Bond Framework outlines a process for tracking, allocation and managing proceeds, and makes commitments for VMED O2 to report on the allocation and impact of their use. Furthermore, Sustainalytics is of the opinion that the Virgin Media O2 Green Bond Framework is aligned with the overall sustainability strategy of the Joint Venture and that the use of proceeds categories are expected contribute to the advancement of the UN Sustainable Development Goals 7, 9, 11 and 12. Additionally, Sustainalytics is of the opinion that VMED O2 has adequate measures to identify, manage and mitigate environmental and social risks commonly associated with the eligible projects.

Based on the above, Sustainalytics is confident that VMED O2 is well positioned to issue green bonds and that the Virgin Media O2 Green Bond Framework is robust, transparent and in alignment with the four core components of the Green Bond Principles 2021.

Appendix

Appendix 1: Green Bond / Green Bond Programme - External Review Form

Section 1. Basic Information

Issuer name:	VMED O2 UK Financing I PLC
Green Bond ISIN or Issuer Green Bond Framework Name, if applicable:	Virgin Media O2 Green Bond Framework
Review provider's name:	Sustainalytics
Completion date of this form:	August 5, 2022
Publication date of review publication: Original publication date <i>[please fill this out for updates]</i> :	Update to Virgin Media O2 Green Bond Framework Second-Party Opinion published on June 2021

Section 2. Review overview

SCOPE OF REVIEW

The following may be used or adapted, where appropriate, to summarise the scope of the review.

The review assessed the following elements and confirmed their alignment with the GBP:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Use of Proceeds | <input checked="" type="checkbox"/> Process for Project Evaluation and Selection |
| <input checked="" type="checkbox"/> Management of Proceeds | <input checked="" type="checkbox"/> Reporting |

ROLE(S) OF REVIEW PROVIDER

- | | |
|---|--|
| <input checked="" type="checkbox"/> Consultancy (incl. 2 nd opinion) | <input type="checkbox"/> Certification |
| <input type="checkbox"/> Verification | <input type="checkbox"/> Rating |
| <input type="checkbox"/> Other <i>(please specify)</i> : | |

Note: In case of multiple reviews / different providers, please provide separate forms for each review.

EXECUTIVE SUMMARY OF REVIEW and/or LINK TO FULL REVIEW *(if applicable)*

Please refer to Evaluation Summary above.

Section 3. Detailed review

Reviewers are encouraged to provide the information below to the extent possible and use the comment section to explain the scope of their review.

1. USE OF PROCEEDS

Overall comment on section (*if applicable*):

The eligible categories for the use of proceeds – Energy Efficiency, Renewable Energy, Clean Transportation, Circular Economy Adapted Products, Production Technologies and Processes – are aligned with those recognized by the Green Bond Principles. Sustainalytics considers that investments in the eligible categories are expected to lead to positive environmental impacts and advance the UN Sustainable Development Goals, specifically SDGs 7, 9, 11 and 12.

Use of proceeds categories as per GBP:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Renewable energy | <input checked="" type="checkbox"/> Energy efficiency |
| <input type="checkbox"/> Pollution prevention and control | <input type="checkbox"/> Environmentally sustainable management of living natural resources and land use |
| <input type="checkbox"/> Terrestrial and aquatic biodiversity conservation | <input checked="" type="checkbox"/> Clean transportation |
| <input type="checkbox"/> Sustainable water and wastewater management | <input type="checkbox"/> Climate change adaptation |
| <input checked="" type="checkbox"/> Eco-efficient and/or circular economy adapted products, production technologies and processes | <input type="checkbox"/> Green buildings |
| <input type="checkbox"/> Unknown at issuance but currently expected to conform with GBP categories, or other eligible areas not yet stated in GBP | <input type="checkbox"/> Other (<i>please specify</i>): |

If applicable please specify the environmental taxonomy, if other than GBP:

2. PROCESS FOR PROJECT EVALUATION AND SELECTION

Overall comment on section (*if applicable*):

Virgin Media O2's Environmental Steering Committee oversees the selection of eligible projects, while its Green Bond Sub-Group reviews and evaluates eligible projects. Virgin Media O2 has adopted internal policies and procedures to address environmental and social risks associated with projects being financed under the Framework. Sustainalytics considers these risk management systems to be adequate and the project selection process in line with market practice.

Evaluation and selection

- | | |
|---|---|
| <input checked="" type="checkbox"/> Credentials on the issuer's environmental sustainability objectives | <input checked="" type="checkbox"/> Documented process to determine that projects fit within defined categories |
|---|---|

- | | |
|--|---|
| <input checked="" type="checkbox"/> Defined and transparent criteria for projects eligible for Green Bond proceeds | <input checked="" type="checkbox"/> Documented process to identify and manage potential ESG risks associated with the project |
| <input checked="" type="checkbox"/> Summary criteria for project evaluation and selection publicly available | <input type="checkbox"/> Other (<i>please specify</i>): |

Information on Responsibilities and Accountability

- | | |
|--|--|
| <input checked="" type="checkbox"/> Evaluation / Selection criteria subject to external advice or verification | <input type="checkbox"/> In-house assessment |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

3. MANAGEMENT OF PROCEEDS

Overall comment on section (*if applicable*):

Virgin Media O2's Green Bond Registrar will monitor and track the allocation of proceeds using an internal green bond register. Virgin Media O2 intends to fully allocate proceeds within 36 months of issuance. Pending allocation, unallocated proceeds will be held in line with the Virgin Media O2's standard liquidity management practices. This is in line with market practice.

Tracking of proceeds:

- | |
|---|
| <input checked="" type="checkbox"/> Green Bond proceeds segregated or tracked by the issuer in an appropriate manner |
| <input checked="" type="checkbox"/> Disclosure of intended types of temporary investment instruments for unallocated proceeds |
| <input type="checkbox"/> Other (<i>please specify</i>): |

Additional disclosure:

- | | |
|---|---|
| <input type="checkbox"/> Allocations to future investments only | <input checked="" type="checkbox"/> Allocations to both existing and future investments |
| <input type="checkbox"/> Allocation to individual disbursements | <input checked="" type="checkbox"/> Allocation to a portfolio of disbursements |
| <input checked="" type="checkbox"/> Disclosure of portfolio balance of unallocated proceeds | <input type="checkbox"/> Other (<i>please specify</i>): |

4. REPORTING

Overall comment on section (*if applicable*):

Virgin Media O2 intends to report on the allocation of proceeds and impact metrics on its website on an annual basis until full allocation. Allocation reporting will include the amount of proceeds allocated by eligible category, the share of financing versus refinancing and the balance of unallocated proceeds. In addition, Virgin Media O2 is committed to reporting on relevant impact metrics. Sustainalytics views Virgin Media O2's allocation and impact reporting as aligned with market practice.

Use of proceeds reporting:

- Project-by-project
 On a project portfolio basis
- Linkage to individual bond(s)
 Other (*please specify*):

Information reported:

- Allocated amounts
 Green Bond financed share of total investment
- Other (*please specify*):

Frequency:

- Annual
 Semi-annual
- Other (*please specify*):

Impact reporting:

- Project-by-project
 On a project portfolio basis
- Linkage to individual bond(s)
 Other (*please specify*):

Information reported (expected or ex-post):

- GHG Emissions / Savings
 Energy Savings
- Decrease in water use
 Other ESG indicators (*please specify*):

Frequency

- Annual
 Semi-annual
- Other (*please specify*):

Means of Disclosure

- Information published in financial report
 Information published in sustainability report
- Information published in ad hoc documents
 Other (*please specify*): tons of CO₂e scope 1 and 2) per terabyte data, tons of CO₂e (scope 1 and 2) per Revenue Generating Unit (RGU), tons of CO₂e (scope 1 and 2), electricity use (kWh) per Terabyte data, number of CPE (set top boxes & modems) returned, re-used or re-cycled per annum, and percentage of electric vehicles out of total owned and leased vehicle fleet at most recent year end.
- Reporting reviewed (if yes, please specify which parts of the reporting are subject to external review):

Where appropriate, please specify name and date of publication in the useful links section.

USEFUL LINKS (e.g. to review provider methodology or credentials, to issuer's documentation, etc.)

SPECIFY OTHER EXTERNAL REVIEWS AVAILABLE, IF APPROPRIATE

Type(s) of Review provided:

- | | |
|--|--|
| <input type="checkbox"/> Consultancy (incl. 2 nd opinion) | <input type="checkbox"/> Certification |
| <input type="checkbox"/> Verification / Audit | <input type="checkbox"/> Rating |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Review provider(s):

Date of publication:

ABOUT ROLE(S) OF INDEPENDENT REVIEW PROVIDERS AS DEFINED BY THE GBP

- i. **Second-Party Opinion:** An institution with environmental expertise, that is independent from the issuer may issue a Second-Party Opinion. The institution should be independent from the issuer's adviser for its Green Bond framework, or appropriate procedures, such as information barriers, will have been implemented within the institution to ensure the independence of the Second-Party Opinion. It normally entails an assessment of the alignment with the Green Bond Principles. In particular, it can include an assessment of the issuer's overarching objectives, strategy, policy and/or processes relating to environmental sustainability, and an evaluation of the environmental features of the type of projects intended for the Use of Proceeds.
- ii. **Verification:** An issuer can obtain independent verification against a designated set of criteria, typically pertaining to business processes and/or environmental criteria. Verification may focus on alignment with internal or external standards or claims made by the issuer. Also, evaluation of the environmentally sustainable features of underlying assets may be termed verification and may reference external criteria. Assurance or attestation regarding an issuer's internal tracking method for use of proceeds, allocation of funds from Green Bond proceeds, statement of environmental impact or alignment of reporting with the GBP, may also be termed verification.
- iii. **Certification:** An issuer can have its Green Bond or associated Green Bond framework or Use of Proceeds certified against a recognised external green standard or label. A standard or label defines specific criteria, and alignment with such criteria is normally tested by qualified, accredited third parties, which may verify consistency with the certification criteria.
- iv. **Green Bond Scoring/Rating:** An issuer can have its Green Bond, associated Green Bond framework or a key feature such as Use of Proceeds evaluated or assessed by qualified third parties, such as specialised research providers or rating agencies, according to an established scoring/rating methodology. The output may include a focus on environmental performance data, the process relative to the GBP, or another benchmark, such as a 2-degree climate change scenario. Such scoring/rating is distinct from credit ratings, which may nonetheless reflect material environmental risks.

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For more information, visit www.sustainalytics.com

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