Annual Report
December 31, 2019

VIRGIN MEDIA INC.
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United States

VIRGIN MEDIA INC.

TABLE OF CONTENTS

PART I

FORWARD-LOOKING STATEMENTS

Certain statements in this annual report constitute forward-looking statements. To the extent that statements in this annual report are not recitations of historical fact, such statements constitute forward-looking statements, which, by definition, involve risks and uncertainties that could cause actual results to differ materially from those expressed or implied by such statements. In particular, statements under *Part I. Business, Part I. Risk Factors, Part II. Management's Discussion and Analysis of Financial Condition and Results of Operations* and *Part II. Quantitative and Qualitative Disclosures About Market Risk* may contain forward-looking statements, including statements regarding our business, product, foreign currency and finance strategies, future network extensions, subscriber growth and retention rates, competitive, regulatory and economic factors, the timing and impacts of proposed transactions, the maturity of our markets, the anticipated impacts of new legislation (or changes to existing rules and regulations), anticipated changes in our revenue, costs or growth rates, our liquidity, credit risks, foreign currency risks, interest rate risks, target leverage levels, debt covenants, our future projected contractual commitments and cash flows and other information and statements that are not historical fact.

Where, in any forward-looking statement, we express an expectation or belief as to future results or events, such expectation or belief is expressed in good faith and believed to have a reasonable basis, but there can be no assurance that the expectation or belief will result or be achieved or accomplished. In evaluating these statements, you should consider the risks and uncertainties discussed under *Part I. Risk Factors* and *Part II. Quantitative and Qualitative Disclosures About Market Risk*, as well as the following list of some but not all of the factors that could cause actual results or events to differ materially from anticipated results or events:

- economic and business conditions and industry trends in the United Kingdom (**U.K.**) and Ireland;
- the competitive environment in the cable television, broadband and telecommunications industries in the U.K. and Ireland, including competitor responses to our products and services;
- fluctuations in currency exchange rates and interest rates;
- instability in global financial markets, including sovereign debt issues in the European Union (**E.U.**) and related fiscal reforms;
- consumer disposable income and spending levels, including the availability and amount of individual consumer debt;
- changes in consumer television viewing and broadband internet usage preferences and habits;
- consumer acceptance of our existing service offerings, including our cable television, broadband internet, fixed-line telephony, mobile and business service offerings, and of new technology, programming alternatives and other products and services that we may offer in the future;
- our ability to manage rapid technological changes;
- our ability to maintain or increase the number of subscriptions to our cable television, broadband internet, fixed-line telephony and mobile service offerings and our average revenue per household;
- our ability to provide satisfactory customer service, including support for new and evolving products and services;
- our ability to maintain or increase rates to our subscribers or to pass through increased costs to our subscribers;
- the impact of our future financial performance, or market conditions generally, on the availability, terms and deployment of capital;
- changes in, or failure or inability to comply with, government regulations in the U.K. and Ireland and adverse outcomes from regulatory proceedings;

- government intervention that impairs our competitive position, including any intervention that would open our broadband distribution networks to competitors and any adverse change in our accreditations or licenses;
- our ability to obtain regulatory approval and satisfy other conditions necessary to close acquisitions and dispositions and the impact of conditions imposed by competition and other regulatory authorities in connection with acquisitions;
- our ability to successfully acquire new businesses and, if acquired, to integrate, realize anticipated efficiencies from, and implement our business plan with respect to, the businesses we have acquired or that we expect to acquire;
- changes in laws or treaties relating to taxation, or the interpretation thereof, in the U.K. and Ireland;
- changes in laws and government regulations that may impact the availability and cost of capital and the derivative instruments that hedge certain of our financial risks;
- our ability to navigate the potential impacts on our business of the U.K.'s departure from the E.U.;
- the ability of suppliers and vendors (including our third-party wireless network providers under our mobile virtual network operator (**MVNO**) arrangements) to timely deliver quality products, equipment, software, services and access;
- the availability of attractive programming for our video services and the costs associated with such programming;
- uncertainties inherent in the development and integration of new business lines and business strategies;
- our ability to adequately forecast and plan future network requirements, including the costs and benefits associated with the network extension program in the U.K. and Ireland (the **Network Extension**);
- the availability of capital for the acquisition and/or development of telecommunications networks and services;
- problems we may discover post-closing with the operations, including the internal controls and financial reporting process, of businesses we acquire;
- the leakage of sensitive customer data;
- the outcome of any pending or threatened litigation;
- the loss of key employees and the availability of qualified personnel;
- changes in the nature of key strategic relationships with partners and joint venturers;
- adverse changes in public perception of the "Virgin" brand, which we and others license from Virgin Enterprises Limited, and any resulting impacts on the goodwill of customers toward us; and
- events that are outside of our control, such as political unrest in international markets, terrorist attacks, malicious human acts, natural disasters, pandemics or epidemics (such as the coronavirus (COVID-19)) and other similar events.

The broadband distribution and mobile service industries are changing rapidly and, therefore, the forward-looking statements of expectations, plans and intent in this annual report are subject to a significant degree of risk. These forward-looking statements and the above-described risks, uncertainties and other factors speak only as of the date of this annual report, and we expressly disclaim any obligation or undertaking to disseminate any updates or revisions to any forward-looking statement contained herein, to reflect any change in our expectations with regard thereto, or any other change in events, conditions or circumstances on which any such statement is based. Readers are cautioned not to place undue reliance on any forward-looking statement.

BUSINESS

In this annual report, unless the context otherwise requires, the terms "we," "our," "our company," "us" and "Virgin Media" refer, as the context requires, to Virgin Media Inc. or collectively to Virgin Media and its consolidated subsidiaries. Unless otherwise indicated, operational and statistical data, including subscriber statistics and product offerings, are as of December 31, 2019.

Introduction

We are a wholly-owned subsidiary of Liberty Global plc (**Liberty Global**) that provides broadband internet, video, fixed-line telephony, mobile and broadcasting services in the U.K. and Ireland. We are one of the U.K.'s and Ireland's largest providers of residential broadband internet, video and fixed-line telephony services in terms of the number of customers. We believe our advanced, deep-fiber cable access network enables us to offer faster and higher quality broadband internet services than our digital subscriber line (**DSL**) market participants. As a result, we provide our customers with a leading next generation broadband internet service and one of the most advanced interactive television services available in the U.K. and Irish markets.

Our residential broadband internet subscribers generally access the internet at various download speeds ranging up to 500 Mbps in the U.K. and Ireland, and recently up to 1.1 Gbps across three towns or cities in the U.K., depending on the tier of service selected. We determine pricing for each different tier of broadband internet service through analysis of speed, market conditions and other factors.

Our digital cable service offerings include basic and premium programming and incremental product and service offerings such as enhanced pay-per-view (**PPV**) programming (including digital cable-on-demand), digital cable recorders, ultra high definition (**UHD**), high definition (**HD**) and 3D programming and access to over-the-top (**OTT**) content.

We provide mobile services to our customers in the U.K. and Ireland using third-party networks through MVNO arrangements.

In addition, we provide broadband internet, fixed-line and mobile telephony and other connectivity services to businesses, public sector organizations and service providers in the U.K. and Ireland.

Liberty Global is an international broadband internet and television company operating under the consumer brands Virgin Media, Telenet and UPC. Liberty Global invests in the infrastructure and digital platforms that empower its customers to make the most of the internet, video and communications revolution. Its substantial scale and commitment to innovation enables it to develop market-leading products delivered through next-generation networks that, as of December 31, 2019, connected approximately 11 million customers subscribing to 25 million broadband internet, television and telephony services. As of December 31, 2019, Liberty Global also served over six million mobile subscribers. In addition, Liberty Global owns 50% of VodafoneZiggo, a joint venture in the Netherlands.

Operating Statistics

The following table shows our operating statistics as of December 31, 2019:

CABLE	U.K.	Ireland	Combined
Footprint			
Homes Passed[1]	14,894,400	939,900	15,834,300
Fixed-Line Customer Relationships			
Fixed-line Customer Relationships[2]	5,518,100	435,400	5,953,500
RGUs per Customer Relationship	2.46	2.28	2.45
Subscribers (RGUs)[3]			
Internet[4]	5,271,000	378,200	5,649,200
Video[5]	3,687,400	280,400	3,967,800
Telephony[6]	4,605,500	335,100	4,940,600
Total RGUs	13,563,900	993,700	14,557,600
Customer Bundling			
Single-Play	16.0%	20.0%	16.3%
Double-Play	22.2%	31.8%	22.9%
Triple-Play	61.8%	48.2%	60.8%
Fixed-mobile Convergence[7]	21.9%	12.0%	21.2%
MOBILE			
Mobile Subscribers[8]			
Postpaid	2,915,600	97,600	3,013,200
Prepaid	263,900	—	263,900
Total Mobile subscribers	3,179,500	97,600	3,277,100

(1) Homes Passed are homes, residential multiple dwelling units or commercial units that can be connected to our networks without materially extending the distribution plant. Our Homes Passed counts are based on census data that can change based on either revisions to the data or from new census results.

(2) Fixed-line Customer Relationships are the number of customers who receive at least one of our broadband internet, video or telephony services that we count as RGUs, without regard to which or to how many services they subscribe. Fixed-line Customer Relationships generally are counted on a unique premises basis. Accordingly, if an individual receives our services in two premises (e.g., a primary home and a vacation home), that individual generally will count as two Fixed-line Customer Relationships. We exclude mobile-only customers from Fixed-line Customer Relationships.

(3) Revenue Generating Unit (**RGU**) is separately an Internet Subscriber, Video Subscriber or Telephony Subscriber (each as defined and described below). A home, residential multiple dwelling unit or commercial unit may contain one or more RGUs. For example, if a residential customer subscribed to our video service, fixed-line telephony service and broadband internet service, the customer would constitute three RGUs. Total RGUs is the sum of Internet, Video and Telephony Subscribers. RGUs generally are counted on a unique premises basis such that a given premises does not count as more than one RGU for any given service. On the other hand, if an individual receives one of our services in two premises (e.g., a primary home and a vacation home), that individual will count as two RGUs for that service. Each bundled internet, cable or telephony service is counted as a separate RGU regardless of the nature of any bundling discount or promotion. Non-paying subscribers are counted as subscribers during their free promotional service period. Some of these subscribers may choose to disconnect after their free service period. Services offered without charge on a long-term basis (e.g., VIP subscribers or free service to employees)

generally are not counted as RGUs. We do not include subscriptions to mobile services in our externally reported RGU counts. In this regard, our December 31, 2019 RGU counts exclude our separately reported postpaid and prepaid mobile subscribers.

(4) Internet Subscriber is a home, residential multiple dwelling unit or commercial unit that receives internet services over our networks.

(5) Video Subscriber is a home, residential multiple dwelling unit or commercial unit that receives our video service over our broadband network or through a partner network via a digital video signal while subscribing to any recurring monthly service that requires the use of encryption-enabling technology. Video Subscribers are counted on a unique premises basis. For example, a subscriber with one or more set-top boxes that receives our video service in one premises is generally counted as just one subscriber.

(6) Telephony Subscriber is a home, residential multiple dwelling unit or commercial unit that receives voice services over our networks. Telephony Subscribers exclude mobile telephony subscribers.

(7) Fixed-mobile Convergence penetration represents the number of customers who subscribe to both our internet service and postpaid mobile telephony service, divided by the number of customers who subscribe to our internet service.

(8) Our Mobile Subscriber count represents the number of active subscriber identification module (**SIM**) cards in service rather than services provided. For example, if a Mobile Subscriber has both a data and voice plan on a smartphone this would equate to one Mobile Subscriber. Alternatively, a subscriber who has a voice and data plan for a mobile handset and a data plan for a laptop (via a dongle) would be counted as two Mobile Subscribers. Customers who do not pay a recurring monthly fee are excluded from our Mobile Subscriber counts after a 30 day period of inactivity.

Products and Services in the U.K.

Cable

We offer our customers a choice of packages and tariffs within each of our cable product categories. Our bundled packaging and pricing are designed to encourage our customers to purchase multiple services across our product portfolio by offering incentives to customers who subscribe to two or more of our products. The types and number of services that each customer uses, and the prices we charge for these services, drive our revenue. For example, broadband internet is more profitable than our television services and, on average, our "triple-play" customers are more profitable than "double-play" or "single-play" customers. As of December 31, 2019, 84% of our cable customers received multiple services from us and 62% were "triple-play" customers, receiving broadband internet, video and fixed-line telephony services.

We offer our consumer products and services through a broad range of sales channels, including inbound and outbound telesales, customer care centers and online. We also engage in direct face-to-face marketing initiatives through a dedicated national sales force of approximately 500 representatives, as well as comprehensive national and regional mass media advertising initiatives. We have a national retail store base with 78 retail locations that consist of traditional high street stores and mall based kiosks with approximately 440 sales representatives and support staff. This is complemented by approximately 75 sales representatives that work in transportable pop-up kiosk-type retail outlets that offer a complete range of our consumer products and services. Our stores not only provide sales services, but also showcase our products, allowing demonstrations and customer interaction, and help resolve customer queries. In addition, as of December 31, 2019, we employed approximately 1,300 staff members in our call centers. We also use outsourced call centers in the U.K., Philippines and India.

Broadband Internet

We deliver ultrafast broadband internet services to customers on our cable network. As of December 31, 2019, we provided cable broadband internet services to approximately 5.3 million subscribers. We are one of the leading providers of broadband internet access in the U.K.

We currently offer six tiers of cable broadband internet services to new subscribers with unlimited downloads at speeds of up to 50 Mbps, 100 Mbps, 200 Mbps, 350 Mbps, 500 Mbps and 1.1 Gbps in parts of the U.K.

Television

Our digital cable platform includes access to over 270 linear television channels, advanced interactive features and a range of premium subscription-based and PPV services. As of December 31, 2019, we provided digital cable services to approximately 3.7 million residential subscribers.

In addition to our linear television services, which allow our customers to view television programming at a scheduled time, our digital cable customers also have access to a broad range of digital interactive services, including Virgin TV On Demand, one of the most comprehensive digital cable-on-demand services in the U.K., and Virgin TV Go, one of the most comprehensive cloud-based entertainment services in the U.K., which are described below.

We also offer interactive "red button" applications from the British Broadcasting Corporation (**BBC**) and other commercial broadcasters, such as Sky plc (**Sky**) and BT Group plc (**BT**). Red button functionality in the U.K. permits television viewers to press a red button on their remote control handset to receive additional interactive services, including multiple alternative broadcasts.

TiVo and Digital Set-Top Boxes

We offer three advanced digital set-top boxes, which include multiple tuners enabling recording of multiple programs at the same time. Set-top boxes equipped with digital cable recorders digitally record television programming to a hard disk in real-time, which also allows customers to play back, pause, fast forward or rewind the program at any point during or for a period after the broadcast.

Under a strategic partnership agreement, we are the exclusive distributor of the TiVo user interface software for set-top boxes (subject to certain conditions), which provide converged television and broadband internet capabilities in the U.K. The Virgin Media TiVo set-top box is available in both 1TB and 500GB sizes, with the 1TB version recording up to 500 hours of television.

It brings together television, digital cable-on-demand and OTT services through a single user experience and features unique content discovery and personalization tools. In late 2016, we launched a new set-top box called the Virgin Media V6 box. This device combines UHD/4K video with improved streaming functionalities and more processing power. The Virgin Media V6 box has eight tuners, allowing viewers to record six programs while watching a seventh they previously recorded. The TiVo service, combined with the existing digital cable-on-demand service, makes available television shows, movies and children's programs in addition to supporting web video services such as Netflix, BBC iPlayer, Prime Video and YouTube. As of December 31, 2019, we had approximately 3.6 million TiVo customers, of which more than 2.3 million are using our latest box.

Virgin TV On Demand

Our digital cable-on-demand service provides our customers with instant access to a wide selection of premium movies, television programs, music videos and other digital cable-on-demand content including live PPV events. Content is available in broadcast standard definition (**SD**), HD and UHD/4K. Our HD content is available to all of our digital cable customers who have an HD box, at no additional charge, however the exact channels available depend on the particular customer's package. Viewers can watch programs instantly, without the need for buffering, and can freeze-frame, fast-forward and rewind the content at will. This gives our customers increased control over the content and timing of their television viewing. Additionally, our cable network enables us to provide digital cable-on-demand content to our customers separately from their high-speed data services, thereby maintaining their broadband internet speed.

The primary categories of content available within Virgin TV On Demand are "catch-up" television programming, boxsets, children's programming and movies (on a PPV and premium subscription basis). A selection of content, including our "catch-up" television service, is available free of charge to all of our television customers. The BBC iPlayer is the largest catch-up television service we offer, but we also offer catch-up television content from All 4, My5, ITV Hub and other pay TV linear channels.

Subscription Video On Demand

We offer our television customers basic subscription digital cable-on-demand (**SVOD**) with a selection of content that increases in volume in line with the customer's digital cable subscription tier.

The offering includes 'Virgin TV Exclusives' which is a selection of TV series that are exclusively available to Virgin TV customers. A selection of these shows are available in UHD. The Sky On Demand service allows our customers to access approximately 1,000 hours of television content from across Sky's range of basic channels, and around 1,000 movie titles being made available to Virgin Media subscribers of Sky Cinema. Other content providers include ABC Studios, Sony, Viacom, NBCU and A&E Networks. Tailored advertising is also inserted across many providers within the basic television SVOD and free catch-up services.

Virgin Movies

Our PPV movie service, Virgin Movies, offers hundreds of titles from all the major studios and the majority of independent distributors, most of which are available for rent on the same day as their DVD release and some the same day as their cinema release. All of our digital cable customers have access to Virgin Movies, which, after purchase, may be viewed multiple times within a 48-hour window.

Virgin Media Store

Our Electronic Sell-Through (**EST**) offers television customers and non-customers the opportunity to buy and own movies (usually available before the DVD release or rental) and TV box sets (including series from HBO and Showtime which were previously unavailable to Virgin TV customers). After registering online for a Virgin Media Store Account, content can be purchased and viewed via the Virgin Media Store website. In addition, Virgin TV customers can buy and watch content on their TV via a Virgin TV box powered by TiVo and can also stream or download to watch offline on a compatible mobile device with our Virgin Media Store application (**app**).

Virgin TV Go & Virgin TV Control

In November 2012, we launched Virgin TV Anywhere, one of the U.K.'s most comprehensive internet streaming television services. The service was relaunched as Virgin TV Go on the Liberty Global-wide Horizon Go platform on December 7, 2017. Virgin TV Go allows our television customers to stream more than 110 live television channels and watch Virgin TV On Demand through their web browser or via mobile apps for compatible iOS, Android and Windows devices, anywhere in the U.K., or while traveling in the E.U. with an internet connection. Since August 2018, Maxit or Full House TV customers can also download selected On Demand programs to their Android or iOS devices for offline viewing via the Virgin TV Go app.

Our TiVo customers with iOS or Android mobile devices can manage their box remotely with the Virgin TV Control app. When in the home, these mobile devices can act as a remote control for their boxes. Customers with compatible iOS or Android devices and a V6 box can also watch selected recordings from their V6 box within the home or download them to their devices for offline viewing using the Virgin TV Control app.

Virgin TV Go and Virgin TV Control are available at no extra cost to our digital cable customers. Virgin Media subscribers of Sky Sports or Sky Cinema are able to stream these premium channels online or on iOS and Android mobile devices through Sky-provided services.

Fixed-line Telephony

We provide local, national and international telephony services to our residential customers over our twisted copper, hybrid fiber coaxial cable and fiber-to-the-premise (fiber-to-the-home/-cabinet/-building/-node is referred to herein as **FTTx**) networks. We also provide telephony services through voice over internet protocol (**VoIP**) technology, which was launched in late 2016, and fiber network. We offer a basic line rental service to our cable customers for a fixed monthly fee. In addition, we also offer tiered bundles of call tariffs, features and services, including calling plans that enable customers to make unlimited national landline calls and calls to mobile telephones either during specified periods or anytime, for an incremental fixed monthly fee. Our fixed-line customers can also make calls to mobile customers free of charge and may also subscribe to additional services such as call waiting, call blocking, call forwarding, three-way calling, advanced voicemail and caller line identification services for an additional fee. As of December 31, 2019, we provided fixed-line telephony services to approximately 4.6 million residential subscribers.

Mobile

Our mobile communication services are currently provided using the mobile network owned by BT/EE Limited (**EE**) through an MVNO arrangement. In 2017, we moved from a light MVNO to a full MVNO arrangement due to a revised agreement with EE, with this arrangement expected to be fully implemented by the end of 2020. We offer a broad range of mobile communications products and services available on 4G and 3G, including mobile data services, voice and short message service (**SMS**). We also offer a broad range of handsets, including Android and Apple iOS-based smartphones, and mobile internet services, which complement our fixed broadband internet offering.

In November 2019, we entered into a new five-year MVNO agreement with Vodafone U.K. that will replace our existing MVNO arrangement with EE in 2021 and enable the launch of 5G services for our mobile customers in the U.K. in the near future.

Our customers have free access to our Virgin Media WiFi app (available to download from the App Store and Google Play) which connects them to a footprint of over 3.5 million WiFi hotspots across the U.K., and a further 2.4 million in Europe and the United States (**U.S.**).

Our customer base comprises both postpaid customers, who subscribe to our services for periods ranging from a minimum of 30 days for an airtime contract to up to 36 months for a 'Freestyle' handset purchase agreement, and prepaid customers, who top up their accounts prior to using the services and have no minimum contracted term. 'Freestyle' mobile contracts provide customers with the flexibility to purchase a handset independently of an airtime contract.

As of December 31, 2019, we had approximately 3.2 million mobile services customers, of which approximately 2.9 million were postpaid customers.

We continue to focus on increasing our proportion of higher-value postpaid customers, expanding our range of higher-value mobile handsets and cross-selling into homes already connected to our cable network.

Business

Through the Virgin Media Business brand, we offer a broad portfolio of business-to-business (**B2B**) voice, data and internet solutions to small businesses, medium and large enterprises and public sector organizations in the U.K., ranging from analog telephony to managed data networks and managed communication services. We also provide dark fiber aggregation solutions to our large wholesale customers. B2B peak usage generally occurs at different times of the day from that of our residential customers, which allows for more efficient use of our network. We provide B2B services to approximately 42,000 U.K. businesses and over 3,000 public sector organizations. We have security accreditations across a range of B2B products and services in order to increase our offerings to public sector organizations in the U.K. These accreditations are granted subject to periodic reviews of our policies and procedures by the U.K. governmental authorities. If we were to fail to maintain an accreditation or to obtain a new one when required, it could impact our ability to provide certain offerings to the public sector.

We offer contractual service levels to all B2B customers and these are supported by U.K.-based regional teams. In addition to our standard B2B service levels, a tiered B2B service level is available to tailor service requirements based on size of organization, sector and importance.

Converged Solutions

Converged solutions use a single network to transport voice, data and video, allowing our B2B customers to benefit from cost synergies. Additionally, we offer services such as internet protocol (**IP**) virtual private networks, which enable our customers to prioritize bandwidth for different types of traffic so that more time sensitive data or critical application data is transported with priority, providing increased flexibility and control over data management. Our extensive network reach also enables us to offer large or dispersed organizations the ability to effectively link sites across the U.K. using a wide range of access technologies, supporting services such as voice and video conferencing, instant messaging and file transfers.

Ethernet

Our Ethernet network has approximately 300 Ethernet nodes and is capable of carrying a variety of services and high bandwidth applications simultaneously. We have been delivering Ethernet services for over 10 years and have achieved both Metro Ethernet Forum (**MEF**) 9 and MEF 14 accreditation (becoming the first service provider in the world to renew this accreditation), ensuring our Ethernet product portfolio can support stringent real-time communications applications, including VoIP and HD-quality videoconferencing. We offer a range of products from local area network extensions to managed wide area Ethernet networks, providing our B2B customers with high bandwidth and flexible solutions, including market-leading point to multi-point services.

Applications and Services

As an overlay to network products, we also offer applications, such as video conferencing, and managed services, such as information security services, designed to increase flexibility and reduce costs for our customers.

Voice and Mobile Services

We offer a comprehensive range of B2B voice products, from analog and digital services to converged IP telephony solutions. Our B2B voice solutions include basic features such as call divert and voicemail, as well as products such as Centrex, which provides switchboard-like capability that is managed from our telephone exchange, offering our customers a cost-effective, scalable alternative to a premises-based system. We also provide similar Centrex features through a number of hosted unified IP-based solutions, which add additional features such as integrated messaging and video. This combination of mature services being offered in parallel with a next-generation of converged services allows our customers to carry out phased migrations to new technologies.

In addition, we provide a mobile service to public and private sector B2B customers, providing voice and 3G and 4G data services as a reseller of EE's business services. As a result, we now offer our B2B customers a one-supplier solution for both their fixed-line and mobile telephony needs.

*Bundled offers for small and medium enterprises (**SME**) and small office and home office (**SOHO**) customers*

We offer SME and SOHO customers a range of solutions to help them realize their digital potential underpinned by our ultrafast network. In addition to a range of connectivity products to suit their level of digital requirement, customers can also work with us to meet their voice communications needs (fixed, mobile and IP) and a range of other needs including security and hardware. Virgin Media Business offers the U.K.'s fastest, widely available broadband internet speed for small businesses, a service offering up to 500 Mbps download speed over Virgin Media's own ultrafast network.

Our Network in the U.K.

We deliver voice, video and high-speed data services over our cable access network, which covers parts of many metropolitan areas in the U.K. The deep-fiber design of our access network enables us to transmit data by means of fiber optic cable from equipment in technical properties known as "headends" and "hubsites" to widely deployed distribution cabinets. The data is then transmitted to distribution points via coaxial cable for digital broadband signals and digital television and via twisted copper cables for fixed-line telephony. The final connection into each home from the fiber access network comprises two components combined into a single drop cable (twisted copper and coaxial cable). For video and high-speed data services we only use high capacity coaxial cable, which has considerable spectrum and associated bandwidth capabilities and which concurrently supports a full portfolio of linear and digital cable-on-demand services as well as high-speed broadband internet services for both consumers and business customers. Using DOCSIS 3.0, we currently offer download speeds of up to 500 Mbps for consumers and B2B customers on our hybrid-fiber-coaxial network. Using DOCSIS 3.1, we currently offer download speeds of up to 1.1 Gbps for consumers in selected "Gigacities" regions. We have also conducted trials of higher downstream speeds. For fixed-line telephony services, historically we have used the twisted copper pair access network. However, we more recently started to deliver voice services into the home over the coaxial cable. As a result of the extensive use of fiber in our access networks, we are also able to provide high-speed data network services to business customers delivering nationwide connectivity.

We believe that our deep-fiber access network has enabled us to take a leading position in the roll-out of next-generation broadband internet access technologies in the U.K. In recent years, we completed the upgrade from analog to digital across all of our hybrid fiber coaxial access network footprint. As of December 31, 2019, virtually all of the homes served by our cable network could receive all of our broadband, digital television and fixed-line telephony services. We expect to leverage the latest generation of cable technology (DOCSIS 3.1) to increase the data rates that can be transmitted over the coaxial cable that, in turn, allows our existing infrastructure to support multi-Gigabit customer download speeds.

During 2015, we initiated the Network Extension. For more information regarding the Network Extension, see "*Strategy and Management Focus - Management's Discussion and Analysis of Financial Condition and Results of Operations - Overview*".

Competition

We face intense competition from a variety of entertainment and communications service providers, which offer broadband internet, television, fixed-line telephony and mobile services. In addition, technological advances and product innovations have increased, and are likely to continue to increase, the number of alternative providers available to our customers and intensify the competitive environment.

We believe that our deep-fiber access provides us with several competitive advantages in the areas served by our network. For instance, our cable network allows us to concurrently deliver internet access, together with real-time television and digital cable-on-demand content at higher speeds. Our competitors are typically reliant on the access infrastructure of the U.K.'s incumbent telecommunications provider, BT, which typically relies on copper-pair technology from the local exchange to the customer's home. BT is upgrading its infrastructure to provide data services capable of higher speeds, using FTTC technology, but service providers using BT's existing network are subject to performance constraints as a result of copper based services degrading over distance which affect data download. Our cable network also offers benefits over the infrastructure of satellite service providers, which are unable to offer a full array of interactive services in the absence of a fixed-line telephony or broadband internet connection using third-party access infrastructure. By contrast, our cable infrastructure allows us to provide "triple-play" bundled services of broadband internet, television and fixed-line telephony services without relying on a third-party service provider or network. In serving B2B customers, many aspects of the network can be leveraged at very low incremental cost given that B2B demand peaks at a time when residential consumer demand is low, and peaks at lower levels than residential consumer demand. As such, we believe we have an advantage over other providers who serve either residential or B2B customers, but not both.

We also face intense competition in the mobile retail sector, which is primarily driven by increased pricing pressure from both established and new service providers, evolving customer needs and technological developments.

We offer most of our products on a stand-alone basis or as part of bundled packages designed to encourage customers to subscribe to multiple services. We offer broadband internet, video and fixed-line telephony services to residential users exclusively in areas served by our cable network. We also offer broadband internet, data services, fixed-line telephony and mobile telephony and data services to business users throughout the U.K., using both our own network and wholesale inputs from other providers. Our primary competitors are BT (which now owns and operates mobile operator, EE), Sky (which is now owned by Comcast), TalkTalk Telecom Group plc (**TalkTalk**), Vodafone Limited (**Vodafone**), Hutchison 3G UK Limited (which operates in the U.K. as "**3 UK**") and Telefónica UK Limited (which operates in the U.K. as "**O2**").

Broadband Internet

We have a number of significant competitors in the sector for broadband internet services. Of those competitors, BT Group (including EE) is the largest retail provider, serving approximately 35% of the total number of broadband internet customers in the U.K. We serve approximately 20% of the total broadband sector in the U.K.

BT provides broadband internet access services to both its own retail arm and third party retail providers over its own DSL network. BT has announced its intention to rollout ultrafast speeds of up to 300 Mbps+ by March 2020 to up to 2.7 million premises using G fast technology, a DSL standard applied over the copper local loops. Whilst this is scaled back from its original intentions, BT has focused its efforts to rollout an FTTP service supporting 1 Gbps to four million homes and businesses by March 2021, with current plans to build FTTP in 103 locations, with a target to cover 15 million homes by 2025. In pursuit of those objectives, BT has launched a range of ultrafast consumer packages offering average speeds of up to 145 Mbps and 300 Mbps, using a combination of G fast and FTTP technology, which are currently available to 4.9 million U.K. homes.

Operators such as Sky, TalkTalk and EE deploy their own network access equipment in BT exchanges via a process known as local loop unbundling (**LLU**). This allows an operator to reduce the recurring operating costs charged by BT by reducing the proportion of traffic that must travel directly over BT's network. LLU deployment requires a substantial capital investment to implement and requires a large customer base to deliver a return on investment.

In addition to the competition and pricing pressure in the broadband internet market arising from LLU, we may be subject to increased competition in the provision of broadband internet services from mobile internet and technological developments (such as long-term evolution, or "**LTE**", and 5G mobile technology) and other wireless technologies, such as WiFi and Worldwide Interoperability for Microwave Access (**Wi-Max**). For example, EE and Vodafone's 4G mobile coverage have each reached 99% of the U.K. population, and Vodafone has rolled out 5G to 24 locations in the U.K. EE has also announced its intention to roll out 5G to more than 70 cities and large towns across the U.K. by March 2020.

Television

We are the largest cable television provider in the U.K. in terms of the number of video customers and the sole provider of video cable services in all of our network area. Our digital television services are available to approximately 50% of U.K. television households. Our digital television services compete primarily with those of Sky and BT. Sky is the primary pay satellite television platform in the U.K. and Ireland. Sky owns the U.K. rights to SD, HD and UHD/4K versions, as the case may be, of various sports and movie programming content. Sky is both our principal competitor in the pay-TV market and an important supplier of basic and premium television content to us.

In August 2013, BT launched its own premium BT Sport channels, providing a range of sports content including football from the English Premier League, and in 2019, retained its exclusive rights to the UEFA Champions League and the UEFA Europa League until 2024. The BT Sport channels are available over BT's internet protocol television platform, or "**IPTV**", Sky's satellite system and our cable network. BT has also launched a BT Sport UHD channel.

Content owners, online aggregators and television channel owners are increasingly using broadband internet as a new digital distribution channel direct to consumers. In 2012, a free-to-air internet-connected television service to U.K. homes was launched by YouView, a joint venture which includes Arqiva, BBC, BT, Channel 4, Channel 5, ITV plc (**ITV**) and TalkTalk. Consumers are able to purchase a box from retailers or get a free subsidized box as part of a bundled package (television, broadband internet and telephony) with providers BT and TalkTalk.

Residential customers may also receive digital terrestrial television (**DTT**), which is delivered to customer homes through a conventional television aerial and a separately purchased set-top box or an integrated digital television set. The free-to-air DTT service in the U.K. is called "**Freeview**". This service is provided by a consortium of operators, including the BBC.

The BBC and ITV also offer a free-to-air digital satellite alternative to Freeview service, known as "**Freesat"**. Freesat offers approximately 150 subscription-free television channels, including selected HD channels such as BBC 1 HD, ITV HD and Channel 4 HD. Freesat also offers a range of satellite boxes offering access to catch-up television services under the brand Freetime and a range of digital video recorders (**DVR**) under the brand Freesat+.

Residential customers may also access television content by means of IPTV. BT TV, a combined DTT and video on demand service offered by BT over a DSL broadband connection, is available throughout the U.K. Sky also offers live streamed television and services over a broadband internet connection, through its Sky On Demand, Sky Go and NowTV services. In addition, Netflix, Amazon, Google, Apple and others launched IPTV products. In 2019, ITV and the BBC launched a new joint venture subscription streaming service in the U.K., 'Britbox', which contains archive material as well as some newly commissioned content.

The communications industry is constantly evolving and there are a number of new and emerging technologies which can be used to provide video services that are likely to compete with our digital cable and digital cable-on-demand services. These include the DSL services mentioned above and next-generation LTE services. We expect continued advances in communications technology and in content, such as an increasing adoption of UHD.

Fixed-line Telephony

We compete primarily with BT in providing telephony services to residential customers in the U.K. BT occupies an established position as the former state provider. We also compete with other telecommunications companies that provide telephony services directly, through LLU, or indirectly. These include TalkTalk and Sky, and mobile telephone operators such as EE, Vodafone and 3 U.K. Our share of the fixed-line telephony market in the U.K. is approximately 15%.

We compete with mobile telephone businesses that offer consumers an alternative to fixed-line telephony services. Mobile telephony services also contribute to the competitive price pressure on fixed-line telephony services.

In addition, we face competition from companies offering VoIP, services using the customer’s existing broadband, mobile data and WiFi connections. These services are offered by independent providers, such as WhatsApp and Skype, as well as those affiliated with established competitors, such as BT. These services generally offer free calls between users of the same service, but charge for calls made to fixed-line or mobile numbers either on a flat monthly rate for unlimited calls (typically restricted to geographic areas) or based on usage.

Mobile

In the mobile telephony sector, we face direct competition from mobile network operators (**MNO**s), such as BT (through its wholly-owned subsidiary, EE), O2, Vodafone and 3 U.K., and other MVNOs, such as Tesco Mobile, Lebara, TalkTalk, Sky and ASDA. We also compete with fixed-line telephony operators, with companies offering VoIP services, and from the growth in online communication, as described in “Fixed-line Telephony” above.

EE became the first U.K. MNO to launch 5G in May 2019, with plans to rollout to more than 70 cities and towns by March 2020 and Vodafone, O2 and 3 U.K. all rolled out 5G services in a number of towns and cities during 2019. In November 2019, we entered into a new 5-year MVNO deal with Vodafone that would enable the launch of 5G services for our mobile customers in the U.K. in the near future.

Business

The U.K. B2B telecommunications industry is characterized by strong competition and ongoing consolidation. Competition in the U.K. B2B telecommunications market continues to be value driven, with the key components being quality, reliability and price.

We compete primarily with traditional network operators such as Vodafone UK, which acquired C&W Worldwide in July 2012, and BT. BT represents the main competition nationally due to its network reach and product portfolio. We also compete with regional providers, such as COLT Telecom Group plc, which have a strong network presence within limited geographic areas. Recently, we have faced increasing competition from services provided by MNOs which target small B2B customers.

In the retail sector we continue to focus on small, medium and large nationally oriented businesses and public sector organizations.

Virgin Media Ireland

On February 12, 2015, we acquired a 65% controlling interest in Virgin Media Ireland Ltd. (**VM Ireland**) and its subsidiaries from a subsidiary of Liberty Global outside of the Virgin Media borrowing group (the **VM Ireland Acquisition**). On November 2, 2017, we acquired the remaining 35% non-controlling interest in VM Ireland through the acquisition of VM Ireland Group Limited (**VMIGL**), formerly known as LG Ireland Group Limited, from Liberty Global Europe 2 Limited, our immediate parent (the **VM Ireland NCI Acquisition**).

VM Ireland is the largest cable television operator in Ireland by number of customers. VM Ireland provides broadband internet, video and fixed and mobile telephony services in five regional clusters in Ireland, including the cities of Dublin, Cork, Galway and Limerick to both residential and B2B customers. As of December 31, 2019, VM Ireland provided services to an aggregate of 435,400 customers, comprising one million RGUs (including 378,200 broadband internet subscribers, 280,400 video subscribers and 335,100 fixed-line telephony subscribers) across a footprint of 939,900 Homes Passed. In addition, VM Ireland provided services to 97,600 mobile subscribers. VM Ireland provides digital video services via cable. Highlights of VM Ireland include:

- For video subscribers, the Virgin TV product suite offers different packages ranging to a top tier with 111 video channels and 30 radio channels, along with a variety of premium channels, HD programming, a PPV service and a complimentary VTV Anywhere app available via online and mobile;

- Virgin TV service is currently offered on Liberty Global's "Horizon 3" set-top box platform. VM Ireland is currently migrating to the next iteration of the Liberty platform, "Horizon 4";

- Download speeds of up to 500 Mbps for residential customers and business customers utilizing Euro DOCSIS 3.0 technology;

- Community WiFi networks have been launched in a number of urban centers with plans to activate this network throughout our Ireland footprint;

- Digital telephony, via VoIP, with multiple value-added features; and

- A mobile telephony service via an MVNO arrangement with Three Ireland (Hutchison) Limited. This service was launched in October 2015 and is available to all consumers in the Republic of Ireland.

Regulatory Matters

Overview

Legislative Framework

Our business activities are subject to the laws and regulations of the E.U., the U.K. and Ireland. At an E.U. level, we are regulated by a variety of legal instruments and policies, collectively referred to as the "**Regulatory Framework**," regulating the establishment and operation of electronic communications networks, including cable television and traditional telephony networks, and the offer of electronic communications services, such as telephony, internet and, to some degree, television services. The Regulatory Framework does not generally address issues of content. The Regulatory Framework primarily seeks to open European markets for communications services and comprises:

- Directive 2002/21 on a common regulatory framework for electronic communications networks and services;
- Directive 2002/20 on the authorization of electronic communications networks and services;
- Directive 2002/19 on access to, and interconnection of, electronic communications networks and associated facilities; and
- Directive 2002/22 on universal service and users rights relating to electronic communications networks and services.

These Directives are supplemented by E.U. Directive 2002/58, regulating the processing of personal data and the protection of privacy in the electronic communications sector.

The European Electronic Communications Code (the "**Code**") is the primary source of communications regulation in the E.U. The Code came into effect on December 20, 2018, as part of the Digital Single Market strategy and must be transposed into national law by December 21, 2020. Until then, its predecessor, the Regulatory Framework, will continue to apply. Although many of the rules under the Regulatory Framework have been included in the Code, there are significant changes required to be implemented by Member States.

The Code, similar to the Regulatory Framework, primarily seeks to develop open markets for communication services within Europe. It harmonizes the rules within the E.U. for the establishment and operation of electronic communication networks, including cable television and traditional telephony networks, and the offer of electronic communication services, such as telephony (including OTT services), internet and, to some degree, television services. The Code also includes a number of provisions aimed at providing incentives to boost private sector investment in very high capacity networks and stimulating the harmonization of spectrum licensing to encourage investment in mobile networks, with the intent to result in more advanced services. The Code does not generally address content matters, including radio and television programming, which are specifically regulated by the Audiovisual Media Services (**AVMS**) Directive.

The U.K. government has confirmed that it will transpose the Code in full in the event of a Brexit deal. In the event of a 'no deal' Brexit, the U.K. government has indicated that it will implement parts of the Code that support the U.K.'s policy objectives. It remains to be seen what implications Brexit, see *Risk Factors - Risks Relating to Our Industry and Our Business,* may have on the applicability of these changes, and the Regulatory Framework in general, to the U.K. In December 2019, Ofcom published a consultation on proposed changes to the U.K.'s regulatory rules to implement the Code entitled "Fair treatment and easier switching for broadband and mobile customers."

In the U.K., the Regulatory Framework is implemented through (i) the Communications Act 2003 (as amended), which regulates all forms of communications technology, whether used for telecommunications or broadcasting, and (ii) the Wireless Telegraphy Act 2006, which regulates radio communications in the U.K. (including spectrum licensing arrangements, usage conditions and charges, license bidding and trading and enforcement and penalties). In addition, the Privacy and Electronic Communications Regulations 2003 (as amended) implemented E.U. Directive 2002/58, which regulates the processing of personal data and the protection of privacy in the electronic communications sector.

Telecommunications companies in the U.K., including Virgin Media, are also subject to regulation under the U.K. Broadcasting Acts 1990 and 1996 and other U.K. statutes and subordinate legislation, including the Competition Act 1998, the Enterprise Act

2002 and the Enterprise and Regulatory Reform Act 2013. Ofcom regulates both linear and on-demand programming, with regulatory requirements derived from the AVMS Directive.

In Ireland, the Regulatory Framework is implemented through (i) the Communications Regulation Act 2002 (as amended) which regulates electronic communications networks, including cable networks and traditional telephony networks and electronic communications service providers and (ii) the Wireless Telegraphy Act 1926 (as amended), which regulates radio communications in Ireland (including with respect to the spectrum, licensing arrangements, usage conditions and charges enforcement and penalties). The Privacy and Electronic Communications Regulations 2003 (as amended) implemented E.U. Directive 2002/58, regulating the processing of personal data and the protection of privacy in the electronic communications sector.

We are also subject to regulation under the Broadcasting Act 2009 and other Irish Acts and Statutory Instruments, including the Competition Acts 2002-2014.

U.K. Regulatory Authorities

Ofcom is the key regulatory authority for the communications sector in which we operate in the U.K. It is responsible for furthering the interests of citizens in relation to communications matters and furthering the interests of consumers, in relevant markets where appropriate, by promoting competition. Ofcom is also responsible for regulating the BBC, a role previously undertaken by the BBC Trust. The U.K. Competition and Markets Authority (**CMA**) has jurisdiction with respect to competition matters.

Irish Regulatory Authorities

The Commission for Communications Regulation (**ComReg**) is the key regulatory authority for the communications sector in which we operate in Ireland. It is responsible for furthering the interests of consumers by promoting competition. In particular, ComReg is responsible for regulating the behavior of providers of electronic communications networks or services that have Significant Market Power in identified markets which may have a harmful influence on competition and consumers. A provider is deemed to have Significant Market Power if it has a position of economic strength affording it the power to act independently of competitors and customers within a given market. In November 2015, ComReg signed a cooperation agreement with the Competition and Consumer Protection Commission in relation to consumer protection functions of both bodies. The purpose of the agreement being to ensure greater coordination between these two bodies on consumer related matters, with ComReg now, as a result, playing a more active role in consumer protection matters in the electronic communications sector. The Broadcasting Authority of Ireland (**BAI**) is the key regulatory authority for broadcasting services licensed in Ireland. Further, it has a number of statutory duties that include oversight of public service broadcasters and the allocation of public funding; stimulating the provision of high quality, diverse and innovative programming and promoting diversity of control in the commercial and community sectors. VMTV Ireland, the wholly-owned subsidiary of Virgin Media Limited, has broadcasting licenses from the BAI for its television channels: Virgin Media One, Virgin Media Two, Virgin Media Three and Virgin Media Sport.

End of Contract Notifications

Ofcom has recently issued new regulatory requirements originating from the Code that, effective in February 2020, obligate providers to (i) alert customers who are approaching the end of a minimum contract term to the fact that their contract period is coming to an end and to set out the best new price that the provider can offer them and (ii) once a year, alert customers who are out of contract to that fact and again confirm the best new price the provider can offer them. In both cases, providers must also set out the price available to new customers for an equivalent service offering. These requirements could have a material adverse impact on our revenue and operating income before depreciation and amortization, share-based compensation, related-party fees and allocations, provisions and provision releases related to significant litigation and impairment, restructuring and other operating items (**Segment OCF**) in 2020 and future periods.

Broadband Internet Expansion

At the end of 2019, super-fast broadband internet was available to more than 95% of U.K. premises. To stimulate private investment in this endeavor, the U.K. government has been using money from the publicly funded BBC license fee, underspend from the Analogue TV Switch-Off Project and other sources of public investment. The state aid measure permitting this subsidy was renewed (and amended) in 2016 and is expected, through amendments to its "underspend" provisions, to result in up to an additional 1% to 2% super-fast coverage, making it available to over 97% of U.K. premises by the end of 2020.

The U.K. government also supports the market rollout of full fiber and 5G services. Such support includes public funding for the creation of a match-funded "full fiber deployment" fund, business rate relief for the deployment of new full fiber networks and public funding for a strategic program of full fiber and 5G trials. As a result, the U.K. government's November 2017 budget included £190.0 million for the first and second phases of its local full fiber deployment fund and £160.0 million for the first phase of the 5G trials. In the second half of 2019, the U.K. government set out its ambition for all premises to have access to a gigabit capable service by the end of 2025. To facilitate this, it announced £5 billion of public funding for areas that are not commercially viable. Further detail on this funding, together with a State aid application, are expected to follow in early 2020.

The Telecommunications Infrastructure Bill received Royal Assent in February 2018, which gives effect to the U.K. government's plans to provide full business rate relief for new fiber infrastructure built during the 2017-2022 rating period. Secondary legislation followed in April 2018, clarifying that the relief also applies to new lit fiber and any plant and machinery used to build the infrastructure. In addition, the U.K. government published its Telecoms Infrastructure Review in July 2018. This Review explored whether the conditions for investment in fiber are optimal in the U.K. and what policy changes should be considered to encourage greater investment in new digital infrastructure. The Government concluded that, with the right policy support, infrastructure based competition will deliver FTTP/Gbit capable networks to approximately 90% of U.K. premises. To facilitate this, the U.K. government intends to introduce a notification regime for multiple dwelling unit wayleaves, introduce a requirement for new housing developments to have FTTP access and increase consistency in street works and duct access. To this end, following consultation, the Telecommunications Infrastructure (Leasehold Property) Bill was presented to parliament in October 2019 and is expected to be passed in the summer of 2020. Draft legislation requiring new housing developments to have FTTP access is expected to be presented to parliament in the first half of 2020. In the Queen's speech following the U.K.'s general election in December 2019, the U.K. government set out its intention to conduct a fundamental review of business rates. The details of the review are expected to be announced in early 2020. During the course of 2019, the U.K. government also issued a Statement of Strategic Priorities to Ofcom, emphasizing the importance of promoting investment as key to achieving the U.K.'s connectivity ambitions.

In November 2015, the U.K. government announced that everyone will, beginning in March 2020, have a legal right to request a broadband internet connection of at least 10 Mbps regardless of where they live. The government intends to achieve this by introducing a broadband internet Universal Service Obligation (**USO**). The USO is aimed, in particular, at addressing the final 5% of the population in the U.K. without access to a broadband internet connection of a reasonable speed. The U.K. government introduced legislation in July 2017 to facilitate the introduction of a broadband internet USO. At the same time, BT made an alternative offer to invest approximately £600.0 million to provide ubiquitous minimum broadband internet speeds of 10 Mbps by 2022. The U.K. government formally rejected BT's proposal in December 2017 favoring the imposition of a regulated USO. The U.K. government set out the design for the USO in secondary legislation in March 2018. Ofcom has responsibility for implementation (including designation of the Universal Service Providers (**USPs**) and deciding whether a USO constitutes an "unfair burden" on the USPs and, if so, designing an industry funding mechanism to compensate the USPs). In December 2018, Ofcom issued a consultation on its proposed designation of BT and KCOM Group PLC as the USPs. Ofcom consulted on its approach to assessing any unfair burden claims as well as determining which operators would be required to contribute to a universal service industry fund in late 2019. Ofcom proposed that the USPs would be able to request a review of potential compensation claims for any efficiently incurred 'unfair net cost burden' once per year, for Ofcom to assess. If Ofcom accepts the request for a review, it would consider whether it is fair for the USP to bear some or all of the burden, as well as consider the cost to Ofcom and the industry of establishing and administering an industry fund. The net burden would be assessed based on the incremental cost of delivering the USO, less the benefits associated with being the USP. Ofcom intends to determine which operators would contribute to the fund and how much they would contribute at a later date. Ofcom has also indicated the USPs cannot make this request any earlier than March 2021. In the meantime, the number of consumers who would be eligible for the universal service is expected to decline, as providers continue to upgrade and expand their networks.

The Irish government is investing in a national broadband network which will guarantee the universal availability of high-speed broadband internet, with download speeds of up to 30 Mbps and upload speeds of 6 Mbps by 2022.

Regulation of Television and Video-on-Demand Services

In the U.K., we are required to hold individual licenses under the Broadcasting Acts 1990 and 1996 for any television channels (including barker channels) which we own or operate and for the provision of certain other services on our cable television platform, such as electronic program guides. These television licensable content service (**TLCS**) licenses are granted and administered by Ofcom. Under these licenses, each covered service must comply with a number of Ofcom codes, including the Broadcasting Code, and with all directions issued by Ofcom. Breach of any of the terms of a TLCS license may result in the imposition of fines on the license holder and, ultimately, the license being revoked.

As a provider of an on-demand program service (**ODPS**), we must comply with a number of statutory obligations in relation to "editorial content" and notify Ofcom of our intention to provide an ODPS. Failure to notify Ofcom or comply with the relevant statutory obligations may result in the imposition of fines or, ultimately, the prohibition on providing an ODPS.

Regulation of Electronic Communication Services

In order to operate in the telecommunications sector in the U.K. and Ireland, a provider must comply with general conditions imposed by each country's respective national regulator, those being Ofcom and ComReg. These general conditions cover a broad range of issues including interconnection standards, number portability, deployment of telephone numbers, access to emergency services, sales and marketing standards and general consumer protection measures. Any breach of these general conditions could lead to the imposition of fines by the national regulator and, ultimately, to the suspension or revocation of a company's right to provide electronic communications networks and services. In 2017, Ofcom commenced an own-initiative investigation into whether our early termination charges on residential customers who leave before the end of their minimum contract period breach General Condition 9.3 (by disincentivizing switching) and/or the Consumer Rights Act 2015. On November 16, 2018, Ofcom issued its confirmation decision finding that Virgin Media had breached General Conditions 9.3 and 9.2(j) and imposed a fine of £7.0 million. Virgin Media appealed Ofcom's confirmation decision to the Competition Appeal Tribunal.

Ofcom and ComReg also undertake triennial reviews of the various economic markets within the telecommunications sector to establish whether any provider has Significant Market Power warranting the imposition of remedies.

Broadband Internet Services

<u>Regulation of Broadband Markets.</u> In March 2018, Ofcom completed its last review of the Wholesale Local Access market (incorporating physical or passive network access via methods such as LLU and duct access). Ofcom found that BT continues to hold Significant Market Power and imposed corresponding remedies on it until April 2021. These remedies include price controls on "virtual" access to its wholesale 40/10 Mbps FTTx product, the maintenance of access and pricing controls on its wholesale copper products and improvements to the existing physical infrastructure access product (third party access to BT's duct and pole estate).

<u>Future Approach to Regulation.</u> In July 2018, Ofcom published a Strategic Policy Position, setting out its intended future approach to regulation from April 2021 (aimed at creating regulatory certainty to support investment in full fiber broadband internet). It includes an intention to take a more holistic consideration of business and residential markets (ultimately combining previously separate markets) and to consider different regulatory approaches in different parts of the country, reflecting the varying levels of network competition. In January 2020, Ofcom published the provisional conclusions from its holistic review of the residential broadband internet and business connectivity markets, setting out its intended approach to regulating them (to apply for a five year period beginning in April 2021). It proposes categorizing areas of the country and applying regulation depending on the level of competition in those areas. In both non-competitive areas (~30% of premises) and in potentially competitive areas (~70% of premises), BT Openreach will continue to be required to provide wholesale access to its network; however, in the latter such wholesale access will be limited to BT Openreach's entry-level superfast broadband internet service. Although Ofcom has not identified any competitive areas at this stage, once it does so, all regulation will be lifted from those areas.

Ofcom intends to regulate BT Openreach's wholesale business connections (or 'leased lines') in a similar way to residential broadband internet by varying its approach geographically to reflect the level of current or prospective competition and increasing charges in line with inflation.

Ofcom Review of Business Connectivity Markets. Ofcom published the conclusions of its last review of the business connectivity (leased lines) market in the third quarter of 2019. The review maintained the existing approach, to market definition, (flat) price caps for some wholesale BT services and a narrow dark fiber remedy on BT (in areas where infrastructure competition is non-existent and unlikely to occur). It also introduced an extension of the duct and pole remedy applying to BT to enable its use for (standalone) business grade services. Ofcom published its latest review of the business connectivity market in January 2020, as part of the broader, holistic review of the connectivity markets as discussed above.

In Ireland, Eircom Limited (**Eir**) has been designated as having Significant Market Power in the wholesale broadband internet access market (virtual access and bitstream) and the wholesale physical network access market. In November 2018, ComReg published a decision which has led to a reduction in FTTC-based virtual unbundled access and bitstream prices. Separately, in November 2018, ComReg published an information notice requiring Eir to reduce charges that apply to new FTTH connections and increase charges that apply to migrating customers. These charges took effect from January 1, 2019. The High Court challenge by Sky Ireland was withdrawn and the parties settled in November 2019. ComReg confirmed that they will publish a consultation document on the new Access Network Model in the first quarter of 2020.

In Ireland, ComReg's review of the business connectivity services is ongoing. In a previous leased line market analysis decision (now called business connectivity market), Eir was found to have Significant Market Power in the market for wholesale terminating segments of leased lines. Eir remains subject to regulatory obligations in this market.

Call Origination and Call Transit Services

ComReg completed its review of the wholesale call transit and call origination markets in June 2015. Eir was considered to have Significant Market Power in the market for call origination and wholesale line rental. However, ComReg deemed that Eir no longer had Significant Market Power in the market for call transit. On that basis, Eir remains subject to regulatory obligations in its provision of wholesale call origination and wholesale line rental, but not with respect to its provision of call transit services. In the U.K., BT is subject to partial regulation of its call origination services. ComReg is currently conducting a review of these markets.

Mobile Telephony Services

As an MVNO in the U.K. and Ireland, we are subject to E.U. regulations relating to retail prices for roaming services. These regulations: set limits on certain wholesale and retail tariffs for international mobile voice roaming, SMS tariffs and data roaming within the E.U.; provide for greater levels of transparency of retail pricing information; impose measures to guard against bill shock in respect of data roaming; and set maximum roaming rates within the E.U. Effective June 2017, the E.U. abolished roaming tariffs.

Mobile termination charges applied by MNOs are regulated by Ofcom in the U.K. and ComReg in Ireland under a Significant Market Power charge control condition. In the U.K., under our MVNO agreement with EE, these changes in mobile termination charges are passed on to us. Ofcom has set mobile termination charges for the period of 2018-2021, with rates reducing by approximately 5% from their starting levels by the end of this period. In November 2019, we entered into a new five-year MVNO arrangement with a new MNO host, Vodafone U.K., that will replace our existing MVNO arrangement with EE in 2021.

As Virgin Media offers loan financing to certain customers who purchase a mobile handset, we are also regulated by the Financial Conduct Authority (**FCA**), which regulates and supervises financial market conduct matters. The FCA has focused strongly on conduct risk and on customer outcomes and will continue to do so. This has included a focus on the design and operation of products, the behavior of customers and the operation of markets.

Fixed-line Telephony Services

Virgin Media has been designated as a provider with Significant Market Power on fixed voice termination. As a result, the rates it charges other providers for termination on its network are subject to regulation. This requires, among other things, the provision of termination on fair and reasonable terms, conditions and charges, which must be no higher than BT's regulated charges, unless certain conditions are met.

Regulation Requiring Co-Operation With Law Enforcement

Telecommunications operators are subject to various laws that can require them to store and disclose customer data to law enforcement and the security services. In the U.K., these laws are in the process of being updated. A new Investigatory Powers Act, or "**the Act**," came into effect at the end of 2016 with transitional provisions covering most of 2018. In 2018, the Act was amended to limit the acquisition of data by law enforcement to serious crime, and require data requests to be authorized by an independent body (the Office for Communications Data Authorisations). In Ireland, there is a requirement to disclose customer data to law enforcement and the security services under various laws which will be updated in the near future, although draft bills and/or bills proposing amendments have yet to be published.

Non-Industry Specific Regulation

Our business activities are subject to certain environmental and health and safety laws and regulations. Failure to comply with these laws and regulations may result in us incurring fines or other penalties and we may incur expenditures to account for these fines or penalties, maintain compliance and/or undertake any necessary remediation. In addition, any breach of the aforementioned laws and/or regulations by our affiliates, vendors and/or contractors could result in liability for us.

Legal Proceedings

From time to time, we have become involved in litigation relating to claims arising out of our operations in the normal course of business. For additional information, see note 17 to our consolidated financial statements included in Part II of this annual report.

VAT Matters

Our application of value-added taxes (**VAT**) with respect to certain revenue generating activities has been challenged by the U.K. tax authorities (**HMRC**). HMRC claimed that amounts charged to certain of our customers for payment handling services are subject to VAT, while our company took the position that such charges were exempt from VAT under existing law. At the time of HMRC's initial challenge in 2009, we remitted all related VAT amounts claimed by HMRC, and continued to make such VAT payments pending a ruling on our appeal to the First Tier Tribunal. As the likelihood of loss was not considered probable and we believed that the amounts paid would be recoverable, such amounts were recorded as a receivable on our consolidated balance sheet. In January 2020, the First Tier Tribunal rejected our appeal and ruled in favor of HMRC. Accordingly, during the fourth quarter of 2019 we recorded a net provision for litigation of £41.3 million, which is included in impairment, restructuring and other operating items, net, in our consolidated statement of operations. Our company is currently considering whether to appeal this decision further.

On March 19, 2014, the U.K. government announced a change in legislation with respect to the charging of VAT in connection with prompt payment discounts such as those that we offer to our fixed-line telephony customers. This change, which took effect on May 1, 2014, impacted our company and some of our competitors. HMRC issued a decision in the fourth quarter of 2015 challenging our application of the prompt payment discount rules prior to the May 1, 2014 change in legislation. We appealed this decision. As part of the appeal process, we were required to make aggregate payments of £67.0 million, comprising (i) the challenged amount of £63.7 million (which we paid during the fourth quarter of 2015) and (ii) related interest of £3.3 million (which we paid during the first quarter of 2016). No provision was recorded by our company at that time as the likelihood of loss was not considered to be probable. The aggregate amount paid does not include penalties, which could be significant in the event that penalties were to be assessed. In September 2018, the court rejected our appeal and ruled in favor of HMRC. Accordingly, during the third quarter of 2018, we recorded a provision for litigation of £63.7 million and related interest expense of £3.3 million in our consolidated statement of operations. The First Tier Tribunal gave permission to appeal to the Upper Tribunal and we submitted grounds for appeal on February 22, 2019. The Upper Tribunal hearing took place in February 2020, but no decision has been received. No assurance can be given as to the ultimate outcome of this matter.

Regulatory Developments

For a description of current regulatory developments in the E.U., the U.K. and Ireland that affect our business, see "*Regulatory Matters*" section of this annual report.

Other

Effective April 1, 2017, the rateable value of our existing network and other assets in the U.K. increased significantly. This increase affects the amount we pay for network infrastructure charges as the annual amount payable to the U.K. government is calculated by applying a percentage multiplier to the rateable value of assets. This change has and will continue to significantly increase our network infrastructure charges. As compared to 2019, we expect the aggregate amount of this increase will be approximately £17 million in 2020. Beyond 2020, we expect further but declining increases to these charges through the first quarter of 2022. We continue to believe that these increases are excessive, and retain the right of appeal should more favorable agreements be reached with other operators. The rateable value of our network and other assets in the U.K. remains subject to review by the U.K. government.

In addition to the foregoing items, we have contingent liabilities related to matters arising in the ordinary course of business including (i) legal proceedings, (ii) issues involving VAT and wage, property, withholding and other tax issues and (iii) disputes over interconnection, programming and copyright fees. We do not believe any of these litigation matters alone or in the aggregate will have a material adverse impact on our financial position or results of operations.

Patents, Trademarks, Copyrights and Licenses

We own or have the right to use patents or copyrights which in some cases are, and in other cases may be, of material importance to our business. We own or have the right to use registered trademarks, which in some cases are, and in others may be, of material importance to our business. This includes the exclusive right to use the "Virgin" name and logo under licenses from Virgin Enterprises Limited in connection with our corporate activities and the activities of our consumer and business operations. These licenses, which expire in April 2036, are exclusive to us within the U.K., Republic of Ireland, the Isle of Man and Channel Islands, and are subject to renewal on terms to be agreed. They entitle us to use the "Virgin" name for the broadband internet, television, fixed-line telephony and mobile telephony services we provide to our consumer and business customers, and in connection with the sale of certain communications equipment, such as set-top boxes and cable modems. That exclusivity includes the use of "Virgin Media" for the provision of consumer communication services and "Virgin Media Business" for the provision of business communication services.

Our license agreements provide for an annual royalty of 0.25% of certain consumer, business and content revenues, subject to a minimum annual royalty. The minimum annual royalty for the license applicable to our consumer operations is £8.5 million. The minimum annual royalty for the license applicable to our business operations was £1.5 million at the date of the license. However, an adjustment for inflation has been applied to the minimum annual royalty for our business operations each year on the anniversary of the commencement date of the license. For the period of 12 months from December 16, 2019, the minimum annual royalty will be £2.0 million.

Properties

We own and lease administrative facilities, operational network facilities and retail facilities throughout the U.K. and Ireland. We lease our U.K. headquarters in Reading, Berkshire.

We own or lease the fixed assets necessary for the operation of our businesses, including office space, transponder space, headend facilities, rights of way, cable television and telecommunications distribution equipment, telecommunications switches and customer premises equipment (**CPE**) and other property necessary for our operations. The physical components of our broadband network require maintenance and periodic upgrades to support the new services and products we introduce. Subject to these maintenance and upgrade activities, our management believes that our current facilities are suitable and adequate for our business operations for the foreseeable future.

Employees

As of December 31, 2019, we had approximately 10,850 employees in the U.K. and approximately 950 employees in Ireland. We also had approximately 700 temporary employees in the U.K. and approximately 110 temporary employees in Ireland. There are no employees in the U.K. covered by collective bargaining or recognition agreements, however, there is collective bargaining in Ireland. For employee consultation purposes, we work with and recognize our National and Divisional Employee Voice Forums.

MANAGEMENT

Lutz Schüler, 52, was appointed our Chief Executive Officer (**CEO**) in May 2019. Prior to becoming our CEO, Mr. Schüler served as our Chief Operating Officer from September 2018 and as the CEO of Unitymedia GmbH from January 2011 to August 2018. Mr. Schüler has significant experience in the telecommunications market, with many years of strategic and operational experience and extensive experience in marketing, sales and operations across a wide range of products. He has served in several senior management roles with Telefónica Germany since 1998. From 2006 to 2010, he was Managing Director, Marketing & Sales for Telefónica Germany. Before joining Telefónica Germany in 1998, he worked as product manager with VIAG Interkom GmbH and T-Mobile. Mr. Schüler studied business administration at the University of Augsburg and holds a master's degree in business administration.

Severina Pascu, 47, joined Virgin Media in February 2020 as Chief Financial Officer (**CFO**) and Deputy CEO. Ms. Pascu joined Liberty Global in 2008 as CFO for UPC Romania. Afterwards, she was appointed CEO for UPC Romania and subsequently also for UPC Hungary. Between 2015 and the end of 2017, Ms. Pascu led the cable operations in Poland, Hungary, Romania, the Czech Republic and Slovakia. Most recently, she held the position of CEO of UPC Switzerland. Before she joined Liberty Global in 2008, Ms. Pascu held a number of senior management positions in leading international companies, investment bank CAIB, American telecommunications company Metromedia International and KPMG.

Bill Castell, 41, joined Virgin Media as Deputy CFO in June 2017 and served as Acting CFO from August 2019 to February 2020. Prior to joining, Mr. Castell had a number of senior finance leadership roles at Barclays, including CFO of Barclay's Corporate Bank and Barclaycard in Europe. Mr. Castell is a qualified accountant (ACA), and in his early career worked as an investment banker in Goldman Sachs and as an auditor at Deloitte covering the technology, media and telecoms sector.

Jeff Dodds, 45, re-joined Virgin Media as Managing Director-Mobile in May 2017, and is now Chief Customer Officer and Managing Director. Previously, Mr. Dodds spent almost five years with the company, most recently as Chief Marketing Officer. Prior to re-joining, Mr. Dodds worked for TalkTalk as Managing Director responsible for Mobile. Before that, he spent two years living and working in the Netherlands as the CEO of telecoms business Tele2, where he oversaw the build and launch of its 4G mobile network. Prior to this, Mr. Dodds was the Group Marketing Director for Callaway Golf Europe, and prior to that he worked at Honda UK.

Rob Evans, 53, became our Managing Director for Lightning in April 2017. Prior to this, Mr. Evans was Managing Director of Core Networks & Operations within the Liberty Global T&I organization from January 2016 to February 2017 and Chief Information, Network and Technology Officer with us from April 2015 to December 2015. Before this, Mr. Evans served as our Executive Director of Engineering and Supply Chain beginning in 2009. From 2006 to 2009, Mr. Evans was the Vice President of Network, Data Centres and Global Operations with BP International. Prior to this, he was Vice President of Network Engineering at Cable & Wireless from 2000 to 2006. Mr. Evans has previously held senior management roles with Schlumberger in the United States and with Hong Kong Telecom in Hong Kong and Macau.

Tony Hanway, 51, became the CEO of Virgin Media Ireland in October 2015. Prior to joining the Virgin Media Group, Mr. Hanway held a number of senior roles at O2 Telefonica, including CEO of O2 Ireland from 2011 to 2014. He also served as Chief Commercial Officer of Telefonica O2 Deutschland and Consumer Director of O2 Czech Republic where he was responsible for the Consumer team in Fixed and Mobile telephony. Prior to this, Mr. Hanway held senior roles with AOL UK from 1998 to 2005 where he served as Vice President of Customer Care and Managing Director of AOL Europe Time Warner Operations Ltd. In his early career Mr. Hanway held positions with AIB Bank (U.K.) and Gateway Computers.

Mine Hifzi, 52, became our General Counsel in February 2014. Prior to joining us, Ms. Hifzi was Senior Vice President, Commercial and Legal Affairs, International at Scripps Networks Interactive Inc., which she joined in July 2012. Previously, Ms. Hifzi served as Senior Vice President and General Counsel, International, of Discovery Communication Inc., where she held roles for over 13 years. Ms. Hifzi is qualified as a solicitor in England and Wales.

Peter Kelly, 55, became the Managing Director for our B2B division in September 2013. Prior to joining Virgin Media, Mr. Kelly was Enterprise Director at Vodafone UK, where he served from 2008 and was responsible for managing a team of over 1,500 people. Prior to that, Mr. Kelly was President, Enterprise, EMEA at Nortel.

Kay Schwabedal, 57, was appointed Chief Digitization Officer in October 2019. Initially carving out his career at P&G and McKinsey in marketing and consulting, Mr. Schwabedal has held a number of CEO and Chief Experience Officer leadership roles in GE, Vodafone and KPN's operating companies, building challenger IT outsourcing and fixed and mobile telecommunication businesses. Most recently, Mr. Schwabedal built a digital transformation unit for METRO AG. Mr. Schwabedal has undertaken many entrepreneurial engagements throughout his career including his role as CEO in Bavaria Boats, a leveraged buy-out, as founding partner of the Lead X investment fund and positions on supervisory boards. Mr. Schwabedal holds a joint degree in Mechanical Engineering and Business Administration (Dipl.-Wirtschaftsingenieur) and a master's degree in business administration.

Philipp Wohland, 44, joined Virgin Media as Chief Transformation Officer in 2019, later assuming responsibility for the People Teams in October 2019. Prior to this, Mr. Wohland was Senior Vice President of People and Transformation at Unity Media in Germany, where he led on large-scale transformation initiatives. Mr. Wohland has significant strategic and operational experience having also worked as Senior Vice President of Strategy leading Unity Media's major corporate development from 2008. Prior to Unity Media, Mr. Wohland worked as a project manager at Roland Berger Strategy Consultants from 2000.

Jeanie York, 49, was appointed as Chief Technology and Information Officer at Virgin Media in January 2019. Prior to this, she spent almost six years at Liberty Global, joining as Vice President of Network Operations and later becoming Managing Director in 2017, where her role included responsibility for network engineering and operations. Before joining Liberty Global, Ms. York held a number of senior management positions at Qwest and CenturyLink over a period of 15 years.

PRINCIPAL SHAREHOLDER

Virgin Media is a wholly-owned subsidiary of Liberty Global. Liberty Global is an international broadband internet and television company operating under the consumer brands Virgin Media, Telenet and UPC. Liberty Global invests in the infrastructure and digital platforms that empower its customers to make the most of the internet, video and communications revolution. Its substantial scale and commitment to innovation enables it to develop market-leading products delivered through next-generation networks that, as of December 31, 2019, connected approximately 11 million customers subscribing to 25 million broadband internet, television and telephony services. As of December 31, 2019, Liberty Global also served over six million mobile subscribers. In addition, Liberty Global owns 50% of VodafoneZiggo, a joint venture in the Netherlands.

RISK FACTORS

In addition to the information contained in this annual report, you should consider the following risk factors in evaluating our results of operations, financial condition, business and operations.

The risk factors described in this section have been separated into three groups:

- risks relating to our industry and our business;
- risks relating to our indebtedness, taxes and other financial matters; and
- risks relating to our management, principal shareholder and related parties.

Although we describe below and elsewhere in this annual report the risks we consider to be the most material, there may be other unknown or unpredictable economic, business, competitive, regulatory or other factors that could have material adverse effects on our results of operations, financial condition, business or operations in the future. In addition, past financial performance may not be a reliable indicator of future performance and historical trends should not be used to anticipate results or trends in future periods.

If any of the events described below were to occur, our businesses, prospects, financial condition, results of operations and/or cash flows could be materially adversely affected.

Risks Relating to Regulation in Our Industry and Our Business

We operate in increasingly competitive markets, and there is a risk that we will not be able to effectively compete with other service providers. The markets for cable television, broadband internet, fixed-line telephony and mobile services in which we operate are highly competitive and, in certain markets, we compete with established companies that hold positions of market power in these and/or closely related markets. We face competition from these companies, other established companies and potential new entrants. Technological advances may increase competition or alter the competitive dynamics of markets in which we operate. For example, we face increasing competition from video services provided by, or over the networks of, the incumbent telecommunications operator and other service providers. As the availability and speed of broadband internet increases, we also face competition from OTT video content providers utilizing our or our competitors' high-speed internet connections. In the provision of telephony and broadband internet services, we are experiencing increasing competition from the incumbent telecommunications operators and other service providers in each country in which we operate, as well as mobile providers of voice and data. In addition, continued consolidation within the media industry may permit more competitors to offer "triple-play" bundles of digital television, fixed-line telephony and broadband internet services, or "quad-play" bundles including mobile telephony services. Developments in the DSL and other technology used by the incumbent telecommunications operators and alternative providers have improved the attractiveness of our competitors' products and services and strengthened their competitive position. Developments in wireless technologies, such as LTE and WiFi, are creating additional competitive challenges.

In order to compete effectively, we may be required to reduce the prices we charge for our services or increase the value of our services without being able to recoup associated costs. We may also need to pursue legal and regulatory actions. In addition, some of our competitors offer services that we are unable to offer. We expect the level and intensity of competition to continue to increase from both existing competitors and new market entrants as a result of changes in the regulatory framework of the industries in which we operate, advances in technology, the influx of new market entrants and strategic alliances and cooperative relationships among industry participants. Increased competition could result in increased customer churn, reductions of customer acquisition rates for some products and services and significant price and promotional competition in our markets. In combination with difficult economic environments, these competitive pressures could adversely impact our ability to increase or, in certain cases, maintain the revenue, average revenue per RGU or mobile subscriber, as applicable (**ARPU**), RGUs, mobile subscribers, Segment OCF, Segment OCF margins (Segment OCF divided by revenue) and liquidity of our operating segments.

Changes in technology may limit the competitiveness of and demand for our services. Technology in the video, telecommunications and data services industries is changing rapidly, including advances in current technologies and the emergence of new technologies. New technologies, products and services may impact consumer behavior and therefore demand for our products and services. The ability to anticipate changes in technology and consumer tastes and to develop and introduce new and enhanced products and services on a timely basis will affect our ability to continue to grow, increase our revenue and number of subscribers and remain competitive. New products and services, once marketed, may not meet consumer expectations or demand, can be subject to delays in development and may fail to operate as intended. A lack of market acceptance of new products and services that we may offer, or the development of significant competitive products or services by others, could have a material adverse impact on our business, financial condition, results of operations or cash flow.

Our significant property and equipment additions, namely in connection with our Network Extension, may not generate a positive return. Significant additions to our property and equipment are, or in the future may be, required to add customers to our networks and to upgrade or expand our broadband communications networks and upgrade CPE to enhance our service offerings and improve the customer experience. Additions to our property and equipment, which are currently underway, including in connection with our Network Extension, require significant capital expenditures for equipment and associated labor costs to build out and/or upgrade our networks as well as for related CPE. Additionally, significant competition, the introduction of new technologies, the expansion of existing technologies, such as FTTx and advanced DSL technologies, the impact of natural disasters or adverse regulatory developments could cause us to decide to undertake previously unplanned builds or upgrades of our networks and CPE.

No assurance can be given that any rebuilds, upgrades or extensions of our network (including the Network Extension) will increase penetration rates, increase cable or mobile ARPU, or otherwise generate positive returns as anticipated, or that we will have adequate capital available to finance such rebuilds, upgrades or extensions. Additionally, costs related to our Network Extension and property and equipment additions could end up being greater than originally anticipated or planned. If this is the case, we may require additional financing sooner than anticipated or we may have to delay or abandon some or all of our development and expansion plans or otherwise forego market opportunities. Additional financing may not be available on favorable terms, if at all, and our ability to incur additional debt will be limited by our debt agreements. If we are unable to, or elect not to, pay for costs associated with adding new customers, expanding, extending or upgrading our networks or making our other planned or unplanned additions to our property and equipment, or are delayed in making such investments, our growth could be limited and our competitive position could be harmed.

Adverse economic developments could reduce customer spending for our cable television, broadband internet, fixed-line telephony and mobile services and increase churn. Most of our revenue is derived from customers who could be impacted by adverse economic developments globally, in Europe, the U.K. and Ireland. Ongoing struggles in Europe related to sovereign debt issues, among other things, has contributed to a challenging economic environment. Accordingly, unfavorable economic conditions may impact a significant number of our customers and, as a result, it may be (i) more difficult for us to attract new customers, (ii) more likely that customers will downgrade or disconnect their services and (iii) more difficult for us to maintain ARPU at existing levels. The countries in which we operate may also seek new or increased revenue sources due to fiscal deficits. Such actions may further adversely affect our company. Accordingly, our ability to increase, or, in certain cases, maintain, our revenue, ARPUs, RGUs, Segment OCF, Segment OCF margins and liquidity could be materially adversely affected if the economic environment in Europe, the U.K. or Ireland remains uncertain or declines (including as a result of the U.K.'s vote to leave the E.U.). We are currently unable to predict the extent of any of these potential adverse effects. For a description of the risks associated with the U.K.'s vote to leave the E.U., see "*The U.K.'s departure from the E.U. could have a material adverse effect on our business, financial condition, results of operations or liquidity*" below.

Our fixed-line telephony revenue is declining and unlikely to improve. Business and residential fixed-line telephony usage is declining across the industry. There is a risk that business and residential customers will migrate from using fixed-line telephony to using other forms of telephony, such as VoIP, or mobile. There is no assurance that our fixed-line telephony customers will migrate to our mobile phones and they may eventually shift to other providers of mobile telephony services. Such a migration could have a material adverse effect on our results of operations, revenue and financial condition.

A failure in our network and information systems, whether caused by a natural failure or a security breach, could significantly disrupt our operations. Certain network and information systems are critical to our business activities. Network and information systems may be affected by cyber security incidents that can result from deliberate attacks or system failures. These may include, but are not limited to computer hackings, computer viruses, worms or other destructive or disruptive software, or other malicious activities against our systems as well as third party sites, which could affect the security of our customers' accounts. Cyber security breaches, internal security breaches, physical security breaches or other unauthorized or accidental access to our servers, other information systems or databases could result in tampering with, or the theft or publication of, sensitive business information or personal consumer information or the deletion or modification of records, or could otherwise cause interruptions in our operations. Our network and information systems may also be the subject of power outages, fire, natural disasters, terrorist attacks, war or other similar events. Theft of metals is particularly acute in the U.K. due to high prices for scrap metal, and our network is not immune to such thefts. Such events could result in a degradation of, or disruption to, our cable and non-cable services, and could prevent us from billing and collecting revenue due to us or could damage our equipment and data or could result in damage to our reputation. Disruption to services could result in excessive call volumes to call centers that may not be able to cope with such volume, which could in turn have a material adverse effect on our reputation and brand. Our plans for recovery from, and resilience to, such challenges may not be sufficient. The amount and scope of insurance we maintain against losses resulting from these events may not be sufficient to cover our losses or otherwise adequately compensate us for any disruptions to our business that may result.

Sustained or repeated failures of our own or third-party systems that interrupt our ability to provide services to our customers, prevent us from billing and collecting revenue, or that otherwise prevent us from meeting our obligations in a timely manner, could materially adversely affect our reputation and result in a loss of customers and revenue. These network and information systems-related events could also require significant expenditures to repair or replace damaged networks or information systems or to protect them from similar events in the future. Further, any security breaches, such as misappropriation, misuse, penetration by viruses, worms or other destructive or disruptive software, leakage, falsification or accidental release or loss of information maintained in our information technology systems and networks or those of our business partners (including customer, personnel and vendor data) could damage our reputation, result in legal and/or regulatory action against us, and require us to expend significant capital and other resources to remedy any such security breach. As a result of the increasing awareness concerning the importance of safeguarding personal information, the potential misuse of such information and legislation that has been adopted or is being considered regarding the protection, privacy and security of personal information, the liability associated with information-related risks is increasing, particularly for businesses like ours that handle a large amount of personal customer data. The occurrence of any such network or information system-related events or security breaches could have a material adverse effect on our business and results of operations.

Unauthorized access to our network resulting in piracy could result in a loss of revenue. We rely on the integrity of our technology to ensure that our services are provided only to identifiable paying customers. Increasingly sophisticated means of illicit piracy of television, broadband internet and telephony services are continually being developed in response to evolving technologies. Furthermore, billing and revenue generation for our pay television services rely on the proper functioning of our encryption systems. While we continue to invest in measures to manage unauthorized access to our networks, any such unauthorized access to our cable television service could result in a loss of revenue, and any failure to respond to security breaches could raise concerns under our agreements with content providers, all of which could have a material adverse effect on our business and results of operations.

We depend on third-party suppliers and licensors to supply necessary equipment, software and certain services required for our businesses. We rely on third-party vendors for the equipment, software and services that we require in order to provide services to our customers. Our suppliers often conduct business worldwide and their ability to meet our needs is subject to various risks, including political and economic instability, natural calamities, interruptions in transportation systems, terrorism and labor issues. As a result, we may not be able to obtain the equipment, software and services required for our businesses on a timely basis or on satisfactory terms. Any shortfall in CPE could lead to delays in completing extensions to our networks and in connecting customers to our services and, accordingly, could adversely impact our ability to maintain or increase our RGUs, revenue and cash flows. Also, if demand exceeds the suppliers' and licensors' capacity or if they experience financial difficulties, the ability of our businesses to provide some services may be materially adversely affected, which in turn could affect our businesses' ability to attract and retain customers. Although we actively monitor the creditworthiness of our key third-party suppliers and licensors, the financial failure of a key third-party supplier or licensor could disrupt our operations and have an adverse impact on our revenue and cash flows. We rely upon intellectual property that is owned or licensed by us to use various technologies, conduct our operations and sell our products and services. Legal challenges could be made against our use of our or our licensed intellectual property rights (such as trademarks, patents and trade secrets) and we may be required to enter into licensing arrangements on unfavorable terms, incur monetary damages or be enjoined from use of the intellectual property rights in question.

Our mobile services rely on the radio access networks of third-party wireless network providers to carry our mobile communications traffic. Our services to mobile customers rely on the use of MVNO arrangements in which we utilize the radio access networks of third-party wireless network providers to carry our mobile communications traffic. If any of our MVNO arrangements are terminated, or if the respective third-party wireless network provider fails to provide the services required under an MVNO arrangement, or if a third-party wireless network provider fails to deploy and maintain its network, and we are unable to find a replacement network operator on a timely and commercially reasonable basis or at all, we could be prevented from continuing the mobile services relying on such MVNO arrangement. Additionally, as our MVNO arrangements come to term, we may not be able to renegotiate renewal or replacement MVNO arrangements on the same or more favorable terms.

The "Virgin" brand is not under our control and the activities of Virgin Group and other licensees (in other industries) could have a material adverse effect on the goodwill of customers towards us as a licensee. The "Virgin" brand is integral to our corporate identity. We are reliant on the general goodwill of consumers towards the Virgin brand. Consequently, adverse publicity in relation to Virgin Group or its principals, particularly Sir Richard Branson who is closely associated with the brand, or in relation to another licensee of the "Virgin" name and logo in another industry (particularly in the U.K.) could have a material adverse effect on our reputation, business and results of operations. In addition, the licenses from Virgin Enterprises Limited can be terminated in certain circumstances. For example, Virgin Enterprises Limited can terminate the license, after providing us with an opportunity to cure, (i) if we or any of our affiliates commit persistent and material breaches or a flagrant and material breach of the licenses, (ii) if Virgin Enterprises Limited has reasonable grounds to believe that the use (or lack of use) of the licensed trademarks by us has been or is likely to result in a long-term and material diminution in the value of the "Virgin" brand or (iii) if a third party who is not (or one of whose directors is not) a "fit and proper person," such as a legally disqualified director or a bankrupt entity, acquires "control" of Liberty Global. Such a termination could have a material adverse effect on our business and results of operations.

We depend almost exclusively on our relationships with third-party programming providers and broadcasters for programming content, and a failure to acquire a wide selection of popular programming on acceptable terms could adversely affect our business. We enter into agreements for the provision of television programs and channels distributed via our entertainment service with program providers, such as public and commercial broadcasters, or providers of pay or on-demand television and services. We have historically obtained a significant amount of our premium programming and some of our basic programming and PPV sporting events from Sky. Sky is also one of our main competitors in the television services business. Sky is a leading supplier of programming to pay television platforms in the U.K. and is the exclusive supplier of some programming, including its Sky Sports channels and Sky Cinema channels, which are the most popular premium subscription sports and film channels available in the U.K.

The Sky Sports channels, Sky Cinema channels and the BT Sport channels are available in our entertainment service, however, there can be no assurance that we will be able to continue carriage of such channels at a reasonable cost after the current contracts end.

Other significant programming and app suppliers include the BBC, ITV, Channel 4, UKTV, Viacom Inc. (including Five), Discovery Communications Inc., Disney, Sky/NBC/Universal, Turner, a division of Time Warner Inc. and Netflix. Our dependence on these and other suppliers for television programming could have a material adverse effect on our ability to provide attractive programming at a reasonable cost. Additionally, we are frequently negotiating and renegotiating programming agreements and our annual costs for programming can vary. There can be no assurance that we will be able to renegotiate or renew the terms of our programming agreements on acceptable terms or at all. Programming and copyright costs represent a significant portion of our operating costs and are subject to rise in future periods due to various factors, including (1) higher costs associated with the expansion of our digital video content, including rights associated with ancillary product offerings and rights that provide for the broadcast of live sporting events, and (2) rate increases.

If we are unable to obtain or retain attractively priced competitive content, demand for our existing and future video services could decrease, thereby limiting our ability to attract new customers, maintain existing customers and/or migrate customers from lower tier programming to higher tier programming, thereby inhibiting our ability to execute our business plans. Furthermore, we may be placed at a competitive disadvantage if certain of our competitors obtain exclusive programming rights, particularly with respect to popular sports and movie programming, and as certain entrants in the OTT market, for example Netflix, Amazon and even Disney, increasingly produce their own exclusive content.

We do not insure the underground portion of our cable network and various pavement-based electronics associated with our cable network. Our cable network is one of our key assets. However, we do not insure the underground portion of our cable network or various pavement-based electronics associated with our cable network. Almost all of our cable network is constructed underground. As a result, any catastrophe that affects our underground cable network or our pavement-based electronics could prevent us from providing services to our customers and result in substantial uninsured losses that would have a material adverse effect on our business and results of operations.

We are subject to significant regulation, and changes in U.K. and E.U. laws, regulations, governmental policy affecting the conduct of our business, or other risks relating to claims, may have a material adverse effect on our ability to set prices, enter new markets or control our costs. Our principal business activities are regulated and supervised by Ofcom, ComReg and the CMA, among other regulators. Regulatory change is an ongoing process in the communications sector at both the U.K. and E.U. level. Changes in laws, regulations or governmental policy affecting our activities and those of our competitors could significantly influence how we operate our business and introduce new products and services. For example, regulatory changes relating to our activities and those of our competitors, such as changes relating to third party access to infrastructure, the costs of interconnection with other networks, our relationships with third-party programming providers and broadcasters, the prices of competing products and services, or any change in policy allowing more favorable conditions for other operators, could adversely affect our ability to set prices, enter new markets or control our costs. In particular, Ofcom may attempt to require us to make available access to our ducts or may attempt to impose regulation on the cable network, which is currently unregulated.

Our ability to introduce new products and services may also be affected if we cannot predict how existing or future laws, regulations or policies would apply to such products or services. In addition, our business and the industry in which we operate are subject to investigation by regulators and claims brought by private parties, which could lead to enforcement actions, fines and penalties or the assertion of private litigation claims and damages. Any such action could harm our reputation and result in increased costs to the business.

We are also subject to accreditation requirements with respect to certain of our B2B products and services provided to public sector organizations in the U.K. We have security accreditations across a range of B2B products and services for public sector organizations in the U.K., which are granted subject to periodic reviews of our policies and procedures by U.K. governmental entities. If we were to fail to maintain an accreditation or to obtain a new one when required, it could impact our ability to provide certain offerings to the public sector.

The U.K.'s departure from the E.U. could have a material adverse effect on our business, financial condition, results of operations or liquidity. On June 23, 2016, the U.K. held a referendum in which voters approved, on an advisory basis, an exit from the E.U., commonly referred to as "Brexit." The U.K. formally exited the E.U. on January 31, 2020 and has now entered into a transition period until December 31, 2020, during which the U.K. and the E.U. will negotiate to formalize the future U.K.-E.U. relationship with respect to a number of matters, most notably, trade. Although the U.K. has ceased to be an E.U. member, during the transition period their trading relationship will remain the same and the U.K. will continue to follow the E.U.'s rules, such as accepting rulings from the European Court of Justice, and the U.K. will continue to contribute to the E.U.'s budget. Uncertainty remains as to what specific terms of separation may be agreed during the transition period. It is possible that the U.K. will fail to agree to specific separation terms with the E.U. by the end of the transition period, which, absent extension, may require the U.K. to leave the E.U. under a so-called "hard Brexit" or "no-deal Brexit" without specific agreements on trade, finance and other key elements. The foregoing has caused uncertainty as to Brexit's impact on the free movement of goods, services, people and capital between the U.K. and the E.U., customer behavior, economic conditions, interest rates, currency exchange rates, and availability of capital. Examples of the potential impact Brexit could have on our business, financial condition or results of operations include:

- changes in foreign currency exchange rates and disruptions in the capital markets;
- shortages of labor necessary to conduct our business, including our Network Extension;
- disruption to our supply chain and related increased cost of supplies;
- a weakened U.K. economy resulting in decreased consumer demand for our products and services;
- legal uncertainty and potentially divergent national laws and regulations as the U.K. determines which E.U. laws and directives to replace or replicate, or where previously implemented by enactment of U.K. laws or regulations, to retain, amend or repeal; and
- various geopolitical forces may impact the global economy and our business, including, for example, other E.U. member states proposing referendums to, or electing to, exit the E.U.

Risks Relating to Our Indebtedness, Taxes and Other Financial Matters

We have substantial indebtedness that may have a material adverse effect on our available cash flow, our ability to obtain additional financing if necessary in the future, our flexibility in reacting to competitive and technological changes and our operations. We have a substantial amount of indebtedness. As of December 31, 2019, the outstanding principal amount of our consolidated third-party debt, together with our finance lease obligations, aggregated £12,007.1 million, including £1,868.9 million that is classified as current on our consolidated balance sheet and £8,702.7 million that is not due until 2025 or thereafter.

Our ability to pay principal and interest on or to refinance the outstanding indebtedness depends upon our operating performance, which will be affected by, among other things, general economic, financial, competitive, regulatory and other factors, some of which are beyond our control. Moreover, we may not be able to refinance or redeem such debt on commercially reasonable terms, on terms acceptable to us, or at all.

The level of our indebtedness could have important consequences, including the following:

- a substantial portion of our cash flow from operations will have to be dedicated to the payment of interest and principal on existing indebtedness, thereby reducing the funds available for other purposes;
- our ability to obtain additional financing in the future for working capital, capital expenditures, product development, acquisitions or general corporate purposes may be impaired;
- our flexibility in planning for, or reacting to, changes in our business, the competitive environment and the industry in which we operate, and to technological and other changes may be limited;
- we may be placed at a competitive disadvantage as compared to our competitors that are not as highly leveraged;
- our substantial degree of leverage could make us more vulnerable in the event of a downturn in general economic conditions or adverse developments in our business; and
- we are exposed to risks inherent in interest rate and foreign exchange rate fluctuations.

Any of these or other consequences or events could have a material adverse effect on our ability to satisfy our debt obligations, which could adversely affect our business and operations.

We may not be able to fund our debt service obligations in the future. We have significant outstanding indebtedness that could require a partial or comprehensive refinancing in future periods. Borrowings under our credit facilities are currently due between 2023 and 2029, while the maturities of our outstanding senior and senior secured notes currently range from 2022 to 2030. See note 8 to our consolidated financial statements included in Part II of this annual report.

Our ability to implement such a refinancing successfully would be significantly dependent on stable debt capital markets. In addition, we may not achieve or sustain sufficient cash flow in the future for the payment of principal or interest on our indebtedness when due. Consequently, we may be forced to raise cash or reduce expenses by doing one or more of the following:

- raising additional debt;
- restructuring or refinancing our indebtedness prior to maturity and/or on unfavorable terms;
- selling or disposing of some of our assets, possibly on unfavorable terms;
- issuing equity or equity-related instruments that will dilute the equity ownership interest of existing stockholders; or
- foregoing business opportunities, including the introduction of new products and services, acquisitions and joint ventures.

We cannot be sure that any of, or a combination of, the above actions would be sufficient to fund our debt service obligations, particularly in times of turbulent capital markets.

The covenants under our debt agreements place certain limitations on our ability to finance future operations and how we manage our business. The agreements that govern our indebtedness contain financial maintenance tests and restrictive covenants that restrict our ability to incur additional debt and limit the discretion of our management over various business matters. For example, the financial maintenance tests include leverage ratios, and the restrictive covenants impact our ability to:

- pay dividends or make other distributions, or redeem or repurchase equity interests or subordinated obligations;
- make investments;
- sell assets, including the capital stock of subsidiaries;
- enter into certain sale and leaseback transactions and certain vendor financing arrangements;
- create liens;
- enter into agreements that restrict some of our subsidiaries' ability to pay dividends, transfer assets or make related-party loans;
- merge or consolidate or transfer all or substantially all of our assets; and
- enter into certain transactions with affiliates.

These limitations are subject to significant exceptions and qualifications, including the ability to pay dividends, make investments or to make significant prepayments of shareholder debt. However, these covenants could limit our ability to finance our future operations and capital needs and our ability to pursue business opportunities and activities that may be in our interest. In addition, our ability to comply with the provisions of our debt instruments may be affected by events beyond our control.

If we breach any of these covenants, or are unable to comply with the required financial ratios if the drawings under the revolving credit facility exceed a certain percentage of the commitments under such revolving credit facility, we may be in default under our debt instruments. A significant portion of our indebtedness may then become immediately due and payable, and we may not have sufficient assets to repay amounts due thereunder. In addition, any default under these facilities could lead to an event of default and acceleration under other debt instruments that contain cross default or cross acceleration provisions, including the indentures governing the Senior Secured Notes and the Senior Notes.

These restrictions could also materially adversely affect our ability to finance future operations or capital needs or to engage in other business activities that may be in our best interest. We may also incur other indebtedness in the future that may contain financial or other covenants more restrictive than those applicable under our current indebtedness.

We are a holding company dependent upon cash flow from subsidiaries to meet our obligations. Virgin Media Inc. and a number of its subsidiaries are holding companies with no independent operations or significant assets other than investments in their subsidiaries. Each of these holding companies depends upon the receipt of sufficient funds from its subsidiaries to meet its obligations.

The terms of our senior credit facility and other indebtedness limit the payment of dividends, loan repayments and other distributions to or from these companies under certain circumstances. Various agreements governing our debt may restrict and, in some cases, may also prohibit the ability of these subsidiaries to move cash within their restricted group. Applicable tax laws may also subject such payments to further taxation.

Applicable law may also limit the amounts that some of our subsidiaries will be permitted to pay as dividends or distributions on their equity interests or as loans, or even prevent such payments.

We are subject to currency and interest rate risks. We are subject to currency exchange rate risks because substantially all of our revenues and operating expenses are paid in pounds sterling, but we pay interest and principal obligations with respect to portions of our indebtedness in U.S. dollars and euros. To the extent that the pound sterling declines in value against the U.S. dollar and the euro (including as a result of Brexit, as discussed below), the effective cost of servicing our U.S. dollar and euro-denominated debt will be higher. Changes in the exchange rate result in foreign currency gains or losses.

We are also subject to interest rate risks as we have certain interest determined on a variable basis, either through unhedged variable rate debt or derivative hedging contracts. We also incur costs in U.S. dollars and euros in the ordinary course of our business, including for CPE and network maintenance services. Any deterioration in the value of the pound sterling relative to the U.S. dollar or the euro could cause an increase in the effective cost of purchases made in these currencies as only part of these exposures are hedged.

In July 2017, the U.K. Financial Conduct Authority (the authority that regulates LIBOR) announced that it intends to stop compelling banks to submit rates for the calculation of LIBOR after 2021. Currently, it is not possible to predict the exact transitional arrangements for calculating applicable reference rates that may be made in the U.K., the U.S., the eurozone or elsewhere given that a number of outcomes are possible, including the cessation of the publication of one or more reference rates. Our credit agreements contain provisions that contemplate alternative calculations of the base rate applicable to our LIBOR-indexed debt to the extent LIBOR is not available, which alternative calculations we do not anticipate will be materially different from what would have been calculated under LIBOR. Additionally, no mandatory prepayment or redemption provisions would be triggered under our credit agreements in the event that the LIBOR rate is not available. It is possible, however, that any new reference rate that applies to our LIBOR-indexed debt could be different than any new reference rate that applies to our LIBOR-indexed derivative instruments. We anticipate managing this difference and any resulting increased variable-rate exposure through modifications to our debt and/or derivative instruments, however future market conditions may not allow immediate implementation of desired modifications and/or the company may incur significant associated costs.

As a result of the U.K.'s departure from the E.U., global markets and foreign currencies have been adversely impacted. In particular, the value of the pound sterling relative to the U.S. dollar remains at levels that are significantly below pre-Brexit levels. This volatility in foreign currencies is expected to continue as the U.K. and the E.U. negotiate to formalize the future U.K.-E.U. relationship within the transition period, which ends on December 31, 2020. A significantly weaker pound sterling compared to the U.S. dollar could, in addition to the consequences discussed above, have a significant negative effect on our business, financial condition and results of operations. For a description of the risks associated with the U.K.'s departure from the E.U., see "*Risks Relating to Our Industry and Our Business - The U.K.'s departure from the E.U. could have a material adverse effect on our business, financial condition, results of operations or liquidity*" above.

We are subject to increasing operating costs and inflation risks, which may adversely affect our results of operations. While our operations attempt to increase our subscription rates to offset increases in programming and operating costs, there is no assurance that they will be able to do so. Our ability to increase subscription rates is subject to regulatory controls in both the U.K. and Ireland. Also, our ability to increase subscription rates may be constrained by competitive pressures. Therefore, operating costs may rise faster than associated revenue, resulting in a material negative impact on our cash flow and net earnings (loss). We are also impacted by inflationary increases in salaries, wages, benefits and other administrative costs in the U.K. and Ireland.

We are subject to tax in more than one tax jurisdiction and our structure poses various tax risks. We are subject to taxation in multiple jurisdictions, in particular, the U.S., the U.K. and Ireland. Our effective tax rate and tax liability will be affected by a number of factors in addition to our operating results, including the amount of taxable income in particular jurisdictions, the tax rates in those jurisdictions, tax treaties between jurisdictions, the manner in which and the extent to which we transfer funds to and repatriate funds from our subsidiaries, accounting standards and changes in accounting standards, and future changes in the law. We may incur losses in one jurisdiction that cannot be offset against income earned in a different jurisdiction and so we may pay income taxes in one jurisdiction for a particular period even though on an overall basis we incur a net loss for that period.

We may have exposure to additional tax liabilities. We are subject to income taxes as well as non-income based taxes, such as VAT in the U.K., the U.S. and Ireland. In addition, the tax jurisdictions that we operate in have complex and subjective rules regarding the valuation of intercompany services, cross-border payments between affiliated companies and the related effects on income tax, VAT and transfer tax. Significant judgment is required in determining our worldwide provision for income taxes and other tax liabilities. In the ordinary course of our business, there are many transactions and calculations where the ultimate tax determination is uncertain. We are regularly under audit by tax authorities in the jurisdictions in which we operate. Although we believe that our tax estimates are reasonable, any material differences as a result of final determinations of tax audits or tax disputes could have an adverse effect on our financial position and results of operations in the period or periods for which determination is made.

We are subject to changing tax laws, treaties and regulations in and between countries in which we operate, including treaties between and among the U.K. and the U.S. Also, various income tax proposals in the jurisdictions in which we operate could result in changes to the existing laws on which our deferred taxes are calculated. A change in these tax laws, treaties or regulations, or in the interpretation thereof, could result in a materially higher income or non-income tax expense, and any such material changes could cause a material change in our effective tax rate. In this regard, there have been significant changes or proposed changes to the tax laws in numerous jurisdictions in which we operate, the impacts of which have been reflected accordingly in our financial statements.

Adverse changes in our financial outlook may result in negative or unexpected tax consequences which could adversely affect our net income. Future adverse changes in the underlying profitability and financial outlook of our operations could cause us to establish a valuation allowance on our deferred tax assets, which could materially and adversely affect our consolidated balance sheets and statements of operations. A change in this valuation allowance will not result in any change to the amount of cash payments we make to the tax authorities.

Strategic transactions present many risks, and we may not realize the financial and strategic goals that were contemplated at the time of any transaction. From time to time we have made acquisitions, dispositions and have entered into other strategic transactions, such as the VM Ireland Acquisition and the VM Ireland NCI Acquisition. In connection with such transactions, we may incur unanticipated expenses, fail to realize anticipated benefits and synergies, have difficulty integrating the combined businesses, disrupt relationships with current and new employees, customers and suppliers, incur significant indebtedness or experience delays or fail to proceed with announced transactions. These factors could have a material adverse effect on our business and/or our reputation.

We are exposed to sovereign debt and currency instability risks that could have an adverse impact on our liquidity, financial condition and cash flows. Our operations are subject to macroeconomic and political risks that are outside of our control. For example, high levels of sovereign debt, combined with weak growth and high unemployment, could potentially lead to fiscal reforms (including austerity measures), tax increases, sovereign debt restructurings, currency instability, increased counterparty credit risk, high levels of volatility and disruptions in the credit and equity markets, as well as other outcomes that might adversely impact our company. With regard to currency instability issues, concerns exist in the eurozone with respect to individual macro-fundamentals on a country-by-country basis, as well as with respect to the overall stability of the European monetary union and the suitability of a single currency to appropriately deal with specific fiscal management and sovereign debt issues in individual eurozone countries. The realization of these concerns could lead to the exit of one or more countries from the European monetary union and the re-introduction of individual currencies in these countries, or, in more extreme circumstances, the possible dissolution of the European monetary union entirely, which could result in the redenomination of a portion or, in the extreme case, all of our euro-denominated assets, liabilities and cash flows to the new currency of the country in which they originated. This could result in a mismatch in the currencies of our assets, liabilities and cash flows. Any such mismatch, together with the capital market disruption that would likely accompany any such redenomination event, could have a material adverse impact on our liquidity and financial condition. Furthermore, any redenomination event would likely be accompanied by significant economic dislocation, particularly within the eurozone countries, which in turn could have an adverse impact on demand for our products and services, and accordingly, on our revenue and cash flows. Moreover, any changes from euro to non-euro currencies within the countries in which we operate would require us to modify our billing and other financial systems. No assurance can be given that any required modifications could be made within a time frame that would allow us to timely bill our customers or prepare and file required financial reports. In light of the significant exposure that we have to the euro through our euro-denominated borrowings, derivative instruments, cash balances and cash flows, a redenomination event could have a material adverse impact on our company.

We are exposed to the risk of default by the counterparties to our cash investments, derivative and other financial instruments, and undrawn debt facilities. Although we seek to manage the credit risks associated with our cash investments, derivative and other financial instruments, and undrawn debt facilities, we are exposed to the risk that our counterparties will default on their obligations to us. While we regularly review our credit exposures and currently have no specific concerns about the creditworthiness of any counterparty for which we have material credit risk exposures, we cannot rule out the possibility that one or more of our counterparties could fail or otherwise be unable to meet its obligations to us. Any such instance of default or failure could have an adverse effect on our cash flows, results of operations, financial condition and/or liquidity. In this regard, (i) we may incur losses to the extent that we are unable to recover debts owed to us, including cash deposited and the value of financial losses, (ii) we may incur significant costs to recover amounts owed to us, and such recovery may take a long period of time or may not be possible at all, (iii) our derivative liabilities may be accelerated by the default of our counterparty, (iv) we may be exposed to financial risks as a result of the termination of affected derivative contracts, and it may be costly or impossible to replace such contracts or otherwise mitigate such risks, (v) amounts available under committed credit facilities may be reduced and (vi) disruption to the credit markets could adversely impact our ability to access debt financing on favorable terms, or at all.

At December 31, 2019, our exposure to counterparty credit risk included (i) derivative assets with an aggregate fair value of £113.9 million, (ii) cash and cash equivalent and restricted cash balances of £58.7 million and (iii) aggregate undrawn debt facilities of £1,000.0 million. For more information on our derivative contracts, see note 5 to our consolidated financial statements included in Part II of this annual report.

Risks Relating to Our Management, Principal Shareholder and Related Parties

The loss of certain key personnel could harm our business. We have experienced employees at both the corporate and operational levels who possess substantial knowledge of our business and operations. There can be no assurance that we will be successful in retaining the services of these employees or that we would be successful in hiring and training suitable replacements without undue costs or delays. As a result, the loss of any of these key employees could cause significant disruptions in our business operations, which could materially adversely affect our results of operations.

The interests of Liberty Global, our indirect parent company, may conflict with our interests. Liberty Global is our parent, indirectly owning all of the voting interests in us. When business opportunities, or risks and risk allocation arise, the interests of Liberty Global (or other Liberty Global controlled entities) may be different from, or in conflict with, our interests on a stand-alone basis. Because we are indirectly controlled by the parent entity, Liberty Global may allocate certain or all of its risks to us and there can be no assurance that Liberty Global will permit us to pursue certain business opportunities.

PART II

Independent Auditors' Report

The Board of Directors
Virgin Media, Inc.:

Report on the Financial Statements

We have audited the accompanying consolidated financial statements of Virgin Media Inc. and its subsidiaries, which comprise the consolidated balance sheets as of December 31, 2019 and 2018, and the related consolidated statements of operations, comprehensive loss, owners' equity, and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes to the consolidated financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Virgin Media Inc. and its subsidiaries as of December 31, 2019 and 2018, and the results of their operations and their cash flows for each of the years in the three-year period ended December 31, 2019 in accordance with U.S. generally accepted accounting principles.

The impact of uncertainties due to the U.K. exiting the European Union on our audit

Uncertainties related to the effects of Brexit are relevant to understanding our audit of the financial statements. All audits assess and challenge the reasonableness of estimates made by the directors, such as recoverability of goodwill and related disclosures and the appropriateness of the going concern basis of preparation of the financial statements. All of these depend on assessments of the future economic environment and the group's future prospects and performance.

Brexit is one of the most significant economic events for the U.K., and its effects are subject to unprecedented levels of uncertainty of consequences, with the full range of possible effects unknown. We applied a standardized firm-wide approach in response to that uncertainty when assessing the group's future prospects and performance. However, no audit should be expected to predict the unknowable factors or all possible future implications for a company and this is particularly the case in relation to Brexit.

The purpose of our audit work and to whom we owe our responsibilities

This report is made solely to the Board of Directors of Virgin Media Inc., as a body, in accordance with the terms of our engagement. Our audit work has been undertaken so that we might state to the Board of Directors of Virgin Media Inc. those matters we are required to state to them in our auditors' report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Board of Directors of Virgin Media Inc., as a body, for our audit work, for this report, or for the opinions we have formed.

/s/ KPMG LLP

London, England
March 13, 2020

VIRGIN MEDIA INC.
CONSOLIDATED BALANCE SHEETS

	December 31,	
	2019	2018
	in millions	
ASSETS		
Current assets:		
Cash and cash equivalents	£ 34.5	£ 16.8
Trade receivables, net	639.6	604.7
Related-party receivables (note 13)	34.8	47.1
Derivative instruments (notes 5 and 13)	82.5	143.1
Prepaid expenses	64.0	64.3
Other current assets (note 4)	148.4	138.9
Total current assets	1,003.8	1,014.9
Property and equipment, net (notes 7 and 9)	6,078.7	6,272.2
Goodwill (note 7)	6,005.8	6,018.4
Deferred income taxes (note 10)	1,540.4	1,453.5
Related-party notes receivable (note 13)	4,963.6	4,863.6
Other assets, net (notes 4, 5, 7, 9, 10 and 15)	987.4	1,532.0
Total assets	£ 20,579.7	£ 21,154.6

The accompanying notes are an integral part of these consolidated financial statements.

VIRGIN MEDIA INC.
CONSOLIDATED BALANCE SHEETS — (Continued)

	December 31,	
	2019	2018
	in millions	
LIABILITIES AND OWNERS' EQUITY		
Current liabilities:		
Accounts payable (note 13)	£ 361.5	£ 410.6
Deferred revenue (note 4)	357.8	369.4
Current portion of debt and finance lease obligations (notes 8 and 9)	1,868.9	1,931.2
Accrued interest	133.2	197.8
Accrued capital expenditures (note 13)	143.9	146.8
Other current liabilities (notes 4, 5, 9, 13 and 14)	695.0	577.7
Total current liabilities	3,560.3	3,633.5
Long-term debt and finance lease obligations (notes 8, 9 and 13)	10,177.4	10,609.2
Other long-term liabilities (notes 4, 5, 9, 10, 13, 14 and 15)	612.2	370.8
Total liabilities	14,349.9	14,613.5
Commitments and contingent liabilities (notes 5, 8, 9, 10, 14, 15 and 17)		
Owners' equity:		
Parent's equity:		
Additional paid-in capital	7,873.4	7,818.9
Accumulated deficit	(1,709.4)	(1,367.0)
Accumulated other comprehensive earnings, net of taxes	83.2	89.2
Total parent's equity	6,247.2	6,541.1
Noncontrolling interest	(17.4)	—
Total owners' equity	6,229.8	6,541.1
Total liabilities and owners' equity	£ 20,579.7	£ 21,154.6

The accompanying notes are an integral part of these consolidated financial statements.

VIRGIN MEDIA INC.
CONSOLIDATED STATEMENTS OF OPERATIONS

	Year ended December 31,		
	2019	2018	2017
		in millions	
Revenue (note 18)	£ 5,168.2	£ 5,150.3	£ 4,963.2
Operating costs and expenses (exclusive of depreciation and amortization, shown separately below):			
Programming and other direct costs of services (note 13)	1,611.8	1,574.2	1,449.8
Other operating (note 13)	708.1	683.4	660.9
Selling, general and administrative (**SG&A**) (notes 12 and 13)	704.3	675.1	680.2
Related-party fees and allocations, net (note 13)	225.4	110.6	100.0
Depreciation and amortization	1,738.2	1,798.2	1,808.2
Impairment, restructuring and other operating items, net (note 14)	93.7	101.9	57.5
	5,081.5	4,943.4	4,756.6
Operating income	86.7	206.9	206.6
Non-operating income (expense):			
Interest expense (note 13)	(640.5)	(655.1)	(615.8)
Interest income – related-party (note 13)	284.6	314.1	329.9
Realized and unrealized gains (losses) on derivative instruments, net (notes 5 and 13)	(160.4)	471.3	(527.4)
Foreign currency transaction gains (losses), net	202.2	(364.0)	566.2
Realized and unrealized gains (losses) due to changes in fair values of certain debt, net (note 8)	(20.8)	0.8	(25.5)
Losses on debt modification and extinguishment, net (note 8)	(115.5)	(28.8)	(52.4)
Other income, net	5.4	10.4	10.0
	(445.0)	(251.3)	(315.0)
Loss before income taxes	(358.3)	(44.4)	(108.4)
Income tax benefit (note 10)	21.0	7.4	21.5
Net loss	(337.3)	(37.0)	(86.9)
Net earnings attributable to noncontrolling interest	(5.1)	—	—
Net loss attributable to parent	£ (342.4)	£ (37.0)	£ (86.9)

The accompanying notes are an integral part of these consolidated financial statements.

VIRGIN MEDIA INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS

	Year ended December 31,		
	2019	2018	2017
		in millions	
Net loss	£ (337.3)	£ (37.0)	£ (86.9)
Other comprehensive earnings (loss), net of taxes (note 16):			
Pension-related adjustments and other (notes 5 and 15)	(10.0)	(2.4)	4.8
Foreign currency translation adjustments	4.0	25.1	(24.8)
Other comprehensive earnings (loss)	(6.0)	22.7	(20.0)
Comprehensive loss	(343.3)	(14.3)	(106.9)
Comprehensive earnings attributable to noncontrolling interest	(5.1)	—	—
Comprehensive loss attributable to parent	£ (348.4)	£ (14.3)	£ (106.9)

The accompanying notes are an integral part of these consolidated financial statements.

VIRGIN MEDIA INC.
CONSOLIDATED STATEMENTS OF OWNERS' EQUITY

	Additional paid-in capital	Accumulated deficit	Accumulated other comprehensive earnings, net of taxes	Total owner's equity
	in millions			
Balance at January 1, 2017, before effect of accounting change	£ 8,405.5	£ (1,288.3)	£ 86.5	£ 7,203.7
Accounting change (note 2)	—	12.4	—	12.4
Balance at January 1, 2017, as adjusted for accounting change	8,405.5	(1,275.9)	86.5	7,216.1
Net loss	—	(86.9)	—	(86.9)
Other comprehensive loss, net of taxes (note 16)	—	—	(20.0)	(20.0)
Conversion of a related-party loan receivable and related accrued interest to equity (note 13)	(317.9)	—	—	(317.9)
Consideration paid in connection with the VM Ireland NCI Acquisition (note 1)	(268.2)	—	—	(268.2)
Tax losses surrendered to Liberty Global subsidiaries (notes 10 and 13)	(32.3)	—	—	(32.3)
Capital charge in connection with the exercise of share-based incentive awards (note 13)	(21.3)	—	—	(21.3)
Share-based compensation (note 12)	19.7	—	—	19.7
Deemed contribution of technology-related services (note 13)	1.4	—	—	1.4
Other	0.6	—	—	0.6
Balance at December 31, 2017	£ 7,787.5	£ (1,362.8)	£ 66.5	£ 6,491.2

The accompanying notes are an integral part of these consolidated financial statements.

VIRGIN MEDIA INC.
CONSOLIDATED STATEMENTS OF OWNERS' EQUITY — (Continued)

	Additional paid-in capital	Accumulated deficit	Accumulated other comprehensive earnings, net of taxes	Total owner's equity
		in millions		
Balance at January 1, 2018, before effect of accounting change	£ 7,787.5	£ (1,362.8)	£ 66.5	£ 6,491.2
Accounting change (note 2)	—	32.8	—	32.8
Balance at January 1, 2018, as adjusted for accounting change	7,787.5	(1,330.0)	66.5	6,524.0
Net loss	—	(37.0)	—	(37.0)
Other comprehensive earnings, net of taxes (note 16)	—	—	22.7	22.7
Share-based compensation (note 12)	21.5	—	—	21.5
Tax losses surrendered by Liberty Global subsidiaries (notes 10 and 13)	17.4	—	—	17.4
Capital charge in connection with the exercise of share-based incentive awards (note 13)	(8.1)	—	—	(8.1)
Other	0.6	—	—	0.6
Balance at December 31, 2018	£ 7,818.9	£ (1,367.0)	£ 89.2	£ 6,541.1

VIRGIN MEDIA INC.
CONSOLIDATED STATEMENTS OF OWNERS' EQUITY — (Continued)

	Parent's equity					
	Additional paid-in capital	Accumulated deficit	Accumulated other comprehensive earnings, net of taxes	Total parent's equity	Non-controlling interest	Total owners' equity
	in millions					
Balance at January 1, 2019	£ 7,818.9	£ (1,367.0)	£ 89.2	£ 6,541.1	£ —	£ 6,541.1
Net loss	—	(342.4)	—	(342.4)	5.1	(337.3)
Other comprehensive loss, net of taxes	—	—	(6.0)	(6.0)	—	(6.0)
Share-based compensation (note 12)	40.2	—	—	40.2	—	40.2
Tax losses surrendered by Liberty Global subsidiaries (notes 10 and 13)	38.9	—	—	38.9	—	38.9
Conversion of related-party loans receivable and related accrued interest to equity	(32.4)	—	—	(32.4)	—	(32.4)
Capital charge in connection with the exercise of share-based incentive awards (note 13)	(23.0)	—	—	(23.0)	—	(23.0)
Impact of consolidation of the Liberty Property Companies (note 1)	22.5	—	—	22.5	(22.5)	—
Deemed contribution of technology-related services (note 13)	5.5	—	—	5.5	—	5.5
Other	2.8	—	—	2.8	—	2.8
Balance at December 31, 2019	£ 7,873.4	£ (1,709.4)	£ 83.2	£ 6,247.2	£ (17.4)	£ 6,229.8

The accompanying notes are an integral part of these consolidated financial statements.

VIRGIN MEDIA INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year ended December 31,		
	2019	2018	2017
		in millions	
Cash flows from operating activities:			
Net loss	£ (337.3)	£ (37.0)	£ (86.9)
Adjustments to reconcile net loss to net cash provided by operating activities:			
Share-based compensation expense	48.3	28.7	22.0
Related-party fees and allocations, net	225.4	110.6	100.0
Depreciation and amortization	1,738.2	1,798.2	1,808.2
Impairment, restructuring and other operating items, net	93.7	101.9	57.5
Amortization of deferred financing costs and non-cash interest	15.7	16.1	16.8
Realized and unrealized losses (gains) on derivative instruments, net	160.4	(471.3)	527.4
Foreign currency transaction losses (gains), net	(202.2)	364.0	(566.2)
Losses on debt modification and extinguishment, net	115.5	28.8	52.4
Realized and unrealized losses (gains) due to changes in fair values of certain debt, net	20.8	(0.8)	25.5
Deferred income tax benefit	(45.0)	(12.7)	(17.8)
Changes in operating assets and liabilities, net of the effect of acquisitions and dispositions:			
Receivables and other operating assets	77.2	51.1	(116.1)
Payables and accruals	120.8	224.4	191.0
Net cash provided by operating activities	2,031.5	2,202.0	2,013.8
Cash flows from investing activities:			
Capital expenditures, net	(428.1)	(431.8)	(523.3)
Repayments from (advances to) related parties, net	(371.0)	89.2	(852.5)
Other investing activities, net	2.2	0.4	3.7
Net cash used by investing activities	£ (796.9)	£ (342.2)	£ (1,372.1)

The accompanying notes are an integral part of these consolidated financial statements.

VIRGIN MEDIA INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS — (Continued)

	Year ended December 31,		
	2019	2018	2017
		in millions	
Cash flows from financing activities:			
Repayments and repurchases of third-party debt and finance lease obligations	£ (5,253.9)	£ (4,045.9)	£ (3,376.0)
Borrowings of third-party debt	4,128.2	2,126.8	3,143.5
Payment of financing costs and debt premiums	(120.7)	(28.0)	(59.6)
Net cash received (paid) related to derivative instruments	96.2	74.6	(0.4)
Net repayments of related-party debt	(0.9)	(0.4)	(257.1)
Other financing activities, net	(39.9)	13.0	(90.6)
Net cash used by financing activities	(1,191.0)	(1,859.9)	(640.2)
Effect of exchange rate changes on cash and cash equivalents and restricted cash	(9.3)	(0.7)	0.5
Net increase (decrease) in cash and cash equivalents and restricted cash	34.3	(0.8)	2.0
Cash and cash equivalents and restricted cash:			
Beginning of period	24.4	25.2	23.2
End of period	£ 58.7	£ 24.4	£ 25.2
Cash paid for interest	£ 693.8	£ 635.3	£ 603.7
Net cash paid (received) for taxes	£ (6.9)	£ 3.0	£ 0.4
Details of end of period cash and cash equivalents and restricted cash:			
Cash and cash equivalents	£ 34.5	£ 16.8	£ 23.8
Restricted cash included in other current assets and other assets, net	24.2	7.6	1.4
Total cash and cash equivalents and restricted cash	£ 58.7	£ 24.4	£ 25.2

The accompanying notes are an integral part of these consolidated financial statements.

(1) Basis of Presentation

General

Virgin Media Inc. (**Virgin Media**) is a wholly-owned subsidiary of Liberty Global plc (**Liberty Global**). Virgin Media provides broadband internet, video, fixed-line telephony and mobile services to consumers and businesses in the United Kingdom (**U.K.**) and Ireland. In these notes, the terms "we," "our," "our company" and "us" may refer, as the context requires, to Virgin Media or collectively to Virgin Media and its subsidiaries.

On November 2, 2017, we acquired the remaining 35.0% non-controlling interest in Virgin Media Ireland Ltd. (**VM Ireland**) from a subsidiary of Liberty Global outside of Virgin Media through the acquisition of VM Ireland Group Limited (**VMIGL**), formerly known as LG Ireland Group Limited (the **VM Ireland NCI Acquisition**). We accounted for this transaction as a common control transfer at carryover basis and give effect to this transaction for all periods presented. In connection with the VM Ireland NCI Acquisition, we acquired the remaining 35.0% of VM Ireland for total consideration of £268.2 million through the creation of a related-party loan from Liberty Global Europe 2 Limited (**LG Europe 2**), our immediate parent. This related-party loan, including accrued interest of £0.3 million, was subsequently cash settled during the fourth quarter of 2017.

In connection with certain Liberty Global reorganizations, we transferred Liberty Property Co I Limited and Liberty Property Co II Limited from our company to Liberty Property Holdco III Limited (**Liberty Property Holdco III**), another subsidiary of Liberty Global outside of Virgin Media (the **VM Property Transfers**). Liberty Property Co I Limited, Liberty Property Co II Limited and Liberty Property Holdco III are collectively referred to as the "**Liberty Property Companies**." The assets held by the Liberty Property Companies are used by Virgin Media and its subsidiaries creating a variable interest in the Liberty Property Companies for which Virgin Media is the primary beneficiary and, accordingly, Virgin Media is required to consolidate the Liberty Property Companies.

Unless otherwise indicated, convenience translations into pound sterling are calculated as of December 31, 2019.

These consolidated financial statements reflect our consideration of the accounting and disclosure implications of subsequent events through March 13, 2020, the date of issuance.

(2) Accounting Changes and Recent Accounting Pronouncements

Accounting Changes

ASU 2016-02

In February 2016, the Financial Accounting Standards Board (**FASB**) issued Accounting Standards Update (**ASU**) No. 2016-02, *Leases* (**ASU 2016-02**), which, for most leases, results in lessees recognizing right-of-use (**ROU**) assets and lease liabilities on the balance sheet. ASU 2016-02, as amended by ASU No. 2018-11, *Targeted Improvements,* requires lessees and lessors to recognize and measure leases at the beginning of the earliest period presented using one of two modified retrospective approaches. A number of optional practical expedients may be applied in transition. We adopted ASU 2016-02 on January 1, 2019.

The main impact of the adoption of ASU 2016-02 relates to the recognition of ROU assets and lease liabilities on our consolidated balance sheet for those leases classified as operating leases under previous accounting principles generally accepted in the U.S. (**GAAP**). In transition, we have applied the practical expedients that permit us not to reassess (i) whether expired or existing contracts contain a lease under the new standard, (ii) the lease classification for expired or existing leases or (iii) whether previously-capitalized initial direct costs would qualify for capitalization under the new standard. In addition, we have not used hindsight during transition.

Upon adoption of ASU 2016-02, on January 1, 2019 we recorded ROU assets of £137.3 million and lease liabilities of £138.4 million related to operating leases. In addition, (i) we reclassified our existing prepaid lease expense, accrued lease expense and lease incentive liabilities, resulting in a net reduction of our ROU assets of £1.1 million and (ii) restructuring liabilities related to operating leases of £1.9 million are now reflected as operating lease liabilities. The adoption of ASU 2016-02 did not have a significant impact on our consolidated statements of operations or cash flows.

We have implemented a new lease accounting system and related internal controls over financial reporting to meet the requirements of ASU 2016-02.

For additional information regarding our leases, see note 9.

ASU 2014-09

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers* (**ASU 2014-09**), which requires an entity to recognize the amount of revenue to which it expects to be entitled for the transfer of goods or services to customers. We adopted ASU 2014-09 effective January 1, 2018 by recording the cumulative effect of the adoption to our accumulated deficit. We applied the new standard to contracts that were not complete at January 1, 2018. The comparative information for the year ended December 31, 2017 contained within these consolidated financial statements and notes has not been restated and continues to be reported under the accounting standards in effect for such period. The implementation of ASU 2014-09 did not have a material impact on our consolidated financial statements.

The principal impacts of ASU 2014-09 on our revenue recognition policies relate to our accounting for (i) time-limited discounts and free service periods provided to our customers and (ii) certain upfront fees charged to our customers, as follows:

- When we enter into contracts to provide services to our customers, we often provide time-limited discounts or free service periods. Under previous accounting rules, we recognized revenue, net of discounts, during the promotional periods and did not recognize any revenue during free service periods. Under ASU 2014-09, revenue recognition for those contracts that contain substantive termination penalties is recognized uniformly over the contractual period. For contracts that do not have substantive termination penalties, we continue to record the impacts of partial or full discounts during the applicable promotional periods.

- When we enter into contracts to provide services to our customers, we often charge installation or other upfront fees. Under previous accounting rules, installation fees related to services provided over our cable networks were recognized as revenue during the period in which the installation occurred to the extent these fees were equal to or less than direct selling costs. Under ASU 2014-09, these fees are generally deferred and recognized as revenue over the contractual period, or longer if the upfront fee results in a material renewal right.

ASU 2014-09 also impacted our accounting for certain upfront costs directly associated with obtaining and fulfilling customer contracts. Under our previous policy, these costs were expensed as incurred unless the costs were in the scope of another accounting topic that allowed for capitalization. Under ASU 2014-09, certain upfront costs associated with contracts that have substantive termination penalties and a term of one year or more are recognized as assets and amortized to operating costs and expenses over the applicable period benefited.

For additional information regarding the impact of our adoption of ASU 2014-09, see note 4.

The cumulative effect of the adoption of ASU 2014-09 on our summary balance sheet information as of January 1, 2018 is as follows:

	Balance at December 31, 2017		ASU 2014-09 Adjustments		Balance at January 1, 2018
			in millions		
Assets:					
Trade receivables, net	£	574.9	(0.6)	£	574.3
Other current assets	£	104.4	34.5	£	138.9
Deferred income taxes	£	1,432.4	(10.2)	£	1,422.2
Other assets, net	£	1,621.0	10.5	£	1,631.5
Liabilities:					
Deferred revenue	£	377.4	1.1	£	378.5
Other long-term liabilities	£	489.6	0.3	£	489.9
Equity:					
Accumulated deficit	£	(1,362.8)	32.8	£	(1,330.0)

The impact of our adoption of ASU 2014-09 on our consolidated balance sheet as of December 31, 2018 was not materially different from the impacts set forth in the above January 1, 2018 summary balance sheet information. Similarly, the adoption of ASU 2014-09 did not have a material impact on our consolidated statement of operations for the year ended December 31, 2018.

ASU 2016-09

In March 2016, the FASB issued ASU No. 2016-09, *Compensation — Stock Compensation, Improvements to Employee Share-Based Payment Accounting* (**ASU 2016-09**), which simplifies several aspects of the accounting for share-based payment transactions, including income tax consequences, classification of awards as either equity or liabilities and classification within the statement of cash flows. We adopted ASU 2016-09 on January 1, 2017. As a result of adopting this standard, we (i) recognized a cumulative effect adjustment to our accumulated deficit as of January 1, 2017 and (ii) retrospectively revised the presentation of our consolidated statements of cash flows to remove the operating cash outflows and financing cash inflows associated with excess tax benefits from share-based compensation. The cumulative effect adjustment, which totaled £12.4 million, represents the tax effect of deductions in excess of the financial reporting expense for share-based compensation that were not previously recognized for financial reporting purposes as these tax benefits were not realized as a reduction of income taxes payable.

Recent Accounting Pronouncements

ASU 2018-15

In August 2018, the FASB issued ASU No. 2018-15, *Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement that is a Service Contract* (**ASU 2018-15**), which requires entities to defer implementation costs incurred that are related to the application development stage in a cloud computing arrangement that is a service contract. Deferred implementation costs will be amortized over the term of the cloud computing arrangement and presented in the same expense line item as the cloud computing arrangement. All other implementation costs will generally be expensed as incurred. We adopted ASU 2018-15 on January 1, 2020 on a prospective basis. As a result of the adoption of ASU 2018-15, (i) certain implementation costs that were previously expensed as incurred will now be deferred as prepaid expenses and amortized over the term of the cloud computing arrangement and (ii) certain costs associated with developing interfaces between a cloud computing arrangement and internal-use software that were previously capitalized as property and equipment will now be deferred as prepaid expenses and amortized over the term of the cloud computing arrangement. We currently do not believe the adoption of ASU 2018-15 will have a significant impact on our consolidated financial statements.

ASU 2016-13

In June 2016, the FASB issued ASU No. 2016-13, *Measurement of Credit Losses on Financial Statements* (**ASU 2016-13**), which changes the recognition model for credit losses related to assets held at amortized cost. ASU 2016-13 eliminates the threshold that a loss must be considered probable to recognize a credit loss and instead requires an entity to reflect its current estimate of lifetime expected credit losses. We adopted ASU 2016-13 on January 1, 2020 on a modified retrospective basis by recording a cumulative effect adjustment to our accumulated deficit. The adoption of ASU 2016-13 did not have a significant impact on our consolidated financial statements.

ASU 2019-12

In December 2019, the FASB issued ASU No. 2019-12, *Simplifying the Accounting for Income Taxes (*(**ASU 2019-12**), which is intended to improve consistency and simplify several areas of existing guidance. ASU 2019-12 removes certain exceptions to the general principles related to the approach for intraperiod tax allocation, the methodology for calculating income taxes in an interim period and the recognition of deferred tax liabilities for outside basis differences. The new guidance also clarifies the accounting for transactions that result in a step-up in the tax basis of goodwill. ASU 2019-12 is effective for annual reporting periods beginning after December 15, 2021, and interim periods within fiscal years beginning after December 15, 2022, with early adoption permitted. We are currently evaluating the effect that ASU 2019-12 will have on our consolidated financial statements.

(3) Summary of Significant Accounting Policies

Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. Estimates and assumptions are used in accounting for, among other things, the valuation of acquisition-related assets and liabilities, allowances for uncollectible accounts, certain components of revenue, programming and copyright costs, deferred income taxes and related valuation allowances, loss contingencies, fair value measurements, impairment assessments, capitalization of internal costs associated with construction and installation activities, useful lives of long-lived assets, share-based compensation and actuarial liabilities associated with certain benefit plans. Actual results could differ from those estimates.

Reclassifications

Certain prior year amounts have been reclassified to conform to the current year presentation.

Principles of Consolidation

The accompanying consolidated financial statements include our accounts and the accounts of all voting interest entities where we exercise a controlling financial interest through the ownership of a direct or indirect controlling voting interest and variable interest entities for which our company is the primary beneficiary. All significant intercompany accounts and transactions have been eliminated in consolidation.

Cash and Cash Equivalents and Restricted Cash

Cash equivalents consist of money market funds and other investments that are readily convertible into cash and have maturities of three months or less at the time of acquisition. We record money market funds at the net asset value as there are no restrictions on our ability, contractual or otherwise, to redeem our investments at the stated net asset value.

Restricted cash consists of cash held in restricted accounts, including cash held in escrow related to our pension plans. Restricted cash amounts that are required to be used to purchase long-term assets or repay long-term debt are classified as long-term assets. All other cash that is restricted to a specific use is classified as current or long-term based on the expected timing of the disbursement.

Our significant non-cash investing and financing activities are disclosed in our consolidated statements of owners' equity and in notes 7, 8 and 13.

Cash Flow Statement

For the purpose of determining the classification of cash flows in our consolidated statements of cash flows, payments on related-party loans are first applied to principal (included as cash flows from financing activities) and then to capitalized interest (included as cash flows from operating activities). Interest-bearing cash advances to related parties and repayments thereof are classified as investing activities. Receipts on related-party receivables are first applied to principal (included as cash flows from investing activities) and then to capitalized interest (included as cash flows from operating activities). All other related-party borrowings, advances and repayments are reflected as financing activities.

For the purpose of our consolidated statements of cash flows, expenses financed by an intermediary are treated as hypothetical operating cash outflows and hypothetical financing cash inflows when the expenses are incurred. When we pay the financing intermediary, we record financing cash outflows in our consolidated statements of cash flows.

The capital expenditures that we report in our consolidated statements of cash flows do not include amounts that are financed under capital-related vendor financing or finance lease arrangements. Instead, these amounts are reflected as non-cash additions to our property and equipment when the underlying assets are delivered and as repayments of debt when the principal is repaid.

Trade Receivables

Our trade receivables are reported net of an allowance for doubtful accounts. Such allowance aggregated £22.9 million and £24.9 million at December 31, 2019 and 2018, respectively. The allowance for doubtful accounts is based upon our assessment of probable loss related to uncollectible accounts receivable. We use a number of factors in determining the allowance, including, among other things, collection trends, prevailing and anticipated economic conditions and specific customer credit risk. The allowance is maintained until either payment is received or the likelihood of collection is considered to be remote.

Concentration of credit risk with respect to trade receivables is limited due to the large number of residential and business customers. We also manage this risk by disconnecting services to customers whose accounts are delinquent.

Financial Instruments

Due to the short maturities of cash and cash equivalents, restricted cash, short-term liquid investments, trade and other receivables, other current assets, accounts payable, accrued liabilities and other accrued and current liabilities, their respective carrying values approximate their respective fair values. For information concerning the fair values of our derivatives and debt, see notes 5 and 8, respectively. For information regarding how we arrive at certain of our fair value measurements, see note 6.

Derivative Instruments

All derivative instruments, whether designated as hedging relationships or not, are recorded on the balance sheet at fair value. If the derivative instrument is not designated as a hedge, changes in the fair value of the derivative instrument are recognized in earnings. If the derivative instrument is designated as a cash flow hedge, the effective portions of changes in the fair value of the derivative instrument are recorded in other comprehensive earnings or loss and subsequently reclassified into our consolidated statements of operations when the hedged forecasted transaction affects earnings. Ineffective portions of changes in the fair value of cash flow hedges are recognized in earnings. With the exception of a limited number of our foreign currency forward contracts, we do not apply hedge accounting to our derivative instruments.

The net cash received or paid related to our derivative instruments is classified as an operating, investing or financing activity in our consolidated statements of cash flows based on the objective of the derivative instrument and the classification of the applicable underlying cash flows. For derivative contracts that are terminated prior to maturity, the cash paid or received upon termination that relates to future periods is classified as a financing activity in our consolidated statement of cash flows.

For information regarding our derivative instruments, see note 5.

Property and Equipment

Property and equipment are stated at cost less accumulated depreciation. We capitalize costs associated with the construction of new cable transmission and distribution facilities and the installation of new cable services. Capitalized construction and installation costs include materials, labor and other directly attributable costs. Installation activities that are capitalized include (i) the initial connection (or drop) from our cable system to a customer location, (ii) the replacement of a drop and (iii) the installation of equipment for additional services, such as digital cable, telephone or broadband internet service. The costs of other customer-facing activities, such as reconnecting and disconnecting customer locations and repairing or maintaining drops, are expensed as incurred. We did not capitalize any interest with respect to construction activities during any of the periods presented.

Capitalized internal-use software is included as a component of property and equipment. We capitalize internal and external costs directly associated with the development of internal-use software. We also capitalize costs associated with the purchase of software licenses. Maintenance and training costs, as well as costs incurred during the preliminary stage of an internal-use software development project, are expensed as incurred.

Depreciation is computed using the straight-line method over the estimated useful life of the underlying asset. Equipment under finance leases is amortized on a straight-line basis over the shorter of the lease term or estimated useful life of the asset. Useful lives used to depreciate our property and equipment are assessed periodically and are adjusted when warranted. The useful lives of cable distribution systems that are undergoing a rebuild are adjusted such that property and equipment to be retired will be fully depreciated by the time the rebuild is completed. For additional information regarding the useful lives of our property and equipment, see note 7.

Additions, replacements and improvements that extend the asset life are capitalized. Repairs and maintenance are charged to operations.

We recognize a liability for asset retirement obligations in the period in which it is incurred if sufficient information is available to make a reasonable estimate of fair values. Asset retirement obligations may arise from the loss of rights of way that we obtain from local municipalities or other relevant authorities, as well as our obligations under certain lease arrangements to restore the property to its original condition at the end of the lease term. Given the nature of our operations, most of our rights of way and certain leased premises are considered integral to our business. Accordingly, for most of our rights of way and certain lease agreements, the possibility is remote that we will incur significant removal costs in the foreseeable future and, as such, we do not have sufficient information to make a reasonable estimate of fair value for these asset retirement obligations.

As of December 31, 2019 and 2018, the recorded value of our asset retirement obligations was £29.7 million and £29.6 million, respectively.

Intangible Assets

Our primary intangible assets relate to goodwill and customer relationships. Goodwill represents the excess purchase price over the fair value of the identifiable net assets acquired in a business combination. Customer relationships are initially recorded at their fair value in connection with business combinations.

Goodwill is not amortized, but instead is tested for impairment at least annually. Intangible assets with finite lives are amortized on a straight-line basis over their respective estimated useful lives to their estimated residual values and reviewed for impairment.

For additional information regarding the useful lives of our intangible assets, see note 7.

Impairment of Property and Equipment and Intangible Assets

When circumstances warrant, we review the carrying amounts of our property and equipment and our intangible assets (other than goodwill) to determine whether such carrying amounts continue to be recoverable. Such changes in circumstance may include (i) an expectation of a sale or disposal of a long-lived asset or asset group, (ii) adverse changes in market or competitive conditions, (iii) an adverse change in legal factors or business climate in the markets in which we operate and (iv) operating or cash flow losses. For purposes of impairment testing, long-lived assets are grouped at the lowest level for which cash flows are largely independent of other assets and liabilities, generally at or below the reporting unit level (see below). If the carrying amount of the asset or asset group is greater than the expected undiscounted cash flows to be generated by such asset or asset group, an impairment adjustment is recognized. Such adjustment is measured by the amount that the carrying value of such asset or asset group exceeds its fair value. We generally measure fair value by considering (a) sale prices for similar assets, (b) discounted estimated future cash flows using an appropriate discount rate and/or (c) estimated replacement cost. Assets to be disposed of are recorded at the lower of their carrying amount or fair value less costs to sell.

We evaluate goodwill for impairment at least annually on October 1 and whenever facts and circumstances indicate that the carrying amounts of goodwill may not be recoverable. For impairment evaluations with respect to goodwill, we first make a qualitative assessment to determine if goodwill may be impaired. If it is more-likely-than-not that a reporting unit's fair value is less than its carrying value, we then compare the fair value of the reporting unit to its respective carrying amount. Any excess of the carrying amount over the fair value would be charged to operations as an impairment loss. A reporting unit is an operating segment or one level below an operating segment (referred to as a "component"). We have identified one reporting unit to which all goodwill is assigned.

Leases

For leases with a term greater than 12 months, we recognize on the lease commencement date (i) ROU assets representing our right to use an underlying asset and (ii) lease liabilities representing our obligation to make lease payments over the lease term. Lease and non-lease components in a contract are generally accounted for separately.

We initially measure lease liabilities at the present value of the remaining lease payments over the lease term. Options to extend or terminate the lease are included only when it is reasonably certain that we will exercise that option. As most of our leases do not provide enough information to determine an implicit interest rate, we generally use a portfolio level incremental borrowing rate in our present value calculation. We initially measure ROU assets at the value of the lease liability, plus any initial direct costs and prepaid lease payments, less any lease incentives received.

With respect to our finance leases, (i) ROU assets are generally depreciated on a straight-line basis over the useful life of the asset and (ii) interest expense on the lease liability is recorded using the effective interest method. Operating lease expense is recognized on a straight-line basis over the lease term. For leases with a term of 12 months or less (short-term leases), we do not recognize ROU assets or lease liabilities. Short-term lease expense is recognized on a straight-line basis over the lease term.

Income Taxes

Income taxes are accounted for under the asset and liability method. We recognize deferred tax assets and liabilities for the future tax consequences attributable to differences between the financial statement carrying amounts and income tax basis of assets and liabilities and the expected benefits of utilizing net operating loss and tax credit carryforwards, using enacted tax rates in effect for each taxing jurisdiction in which we operate for the year in which those temporary differences are expected to be recovered or settled. We recognize the financial statement effects of a tax position when it is more-likely-than-not, based on technical merits, that the position will be sustained upon examination. Net deferred tax assets are then reduced by a valuation allowance if we believe it is more-likely-than-not such net deferred tax assets will not be realized. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in earnings in the period that includes the enactment date. Deferred tax liabilities related to investments in foreign subsidiaries and foreign corporate joint ventures that are essentially permanent in duration are not recognized until it becomes apparent that such amounts will reverse in the foreseeable future. In order to be considered essentially permanent in duration, sufficient evidence must indicate that the foreign subsidiary has invested or will invest its undistributed earnings indefinitely, or that earnings will be remitted in a tax-free manner. Interest and penalties related to income tax liabilities are included in income tax benefit or expense in our consolidated statements of operations.

For additional information regarding our income taxes, see note 10.

Foreign Currency Translation and Transactions

The reporting currency of our company is the pound sterling. The functional currency of our foreign operations generally is the applicable local currency for each foreign subsidiary. Assets and liabilities of foreign subsidiaries (including intercompany balances for which settlement is not anticipated in the foreseeable future) are translated at the spot rate in effect at the applicable reporting date. With the exception of certain material transactions, the amounts reported in our consolidated statements of operations are translated at the average exchange rates in effect during the applicable period. The resulting unrealized cumulative translation adjustment, net of applicable income taxes, is recorded as a component of accumulated other comprehensive earnings or loss in our consolidated statements of owners' equity. With the exception of certain material transactions, the cash flows from our operations in foreign countries are translated at the average rate for the applicable period in our consolidated statements of cash flows. The impacts of material transactions generally are recorded at the applicable spot rates in our consolidated statements of operations and cash flows. The effect of exchange rates on cash balances held in foreign currencies are separately reported in our consolidated statements of cash flows.

Transactions denominated in currencies other than our or our subsidiaries' functional currencies are recorded based on exchange rates at the time such transactions arise. Changes in exchange rates with respect to amounts recorded on our consolidated balance sheets related to these non-functional currency transactions result in transaction gains and losses that are reflected in our consolidated statements of operations as unrealized (based on the applicable period end exchange rates) or realized upon settlement of the transactions.

Revenue Recognition

Service Revenue — Cable Networks. We recognize revenue from the provision of broadband internet, video and fixed-line telephony services over our cable network to customers in the period the related services are provided, with the exception of revenue recognized pursuant to certain contracts that contain promotional discounts, as described below. Installation fees related to services provided over our cable network are generally deferred and recognized as revenue over the contractual period, or longer if the upfront fee results in a material renewal right.

Sale of Multiple Products and Services. We sell broadband internet, video, fixed-line telephony and mobile services to our customers in bundled packages at a rate lower than if the customer purchased each product on a standalone basis. Revenue from bundled packages generally is allocated proportionally to the individual products or services based on the relative standalone selling price for each respective product or service.

Mobile Revenue — General. Consideration from mobile contracts is allocated to the airtime service component and the handset component based on the relative standalone selling prices of each component. When we offer handsets and airtime services in separate contracts entered into at the same time, we account for these contracts as a single contract.

Mobile Revenue — Airtime Services. We recognize revenue from mobile services in the period in which the related services are provided. Revenue from prepaid subscribers is deferred prior to the commencement of services and recognized as the services are rendered or usage rights expire.

Mobile Revenue — Handset Revenue. Revenue from the sale of handsets is recognized at the point in which the goods have been transferred to the customer. Some of our mobile handset contracts that permit the customer to take control of the handset upfront and pay for the handset in installments over a contractual period may contain a significant financing component. For contracts with terms of one year or more, we recognize any significant financing component as revenue over the contractual period using the effective interest method. We do not record the effect of a significant financing component if the contractual period is less than one year.

B2B Revenue. We defer upfront installation and certain nonrecurring fees received on business-to-business (**B2B**) contracts where we maintain ownership of the installed equipment. The deferred fees are amortized into revenue on a straight-line basis, generally over the longer of the term of the arrangement or the expected period of performance. From time to time, we also enter into agreements with certain B2B customers pursuant to which they are provided the right to use certain elements of our network. If these agreements are determined to contain a lease that meets the criteria to be considered a sales-type lease, we recognize revenue from the lease component when control of the network element is transferred to the customer.

Contract Costs. Incremental costs to obtain a contract with a customer, such as incremental sales commissions, are generally recognized as assets and amortized to SG&A expenses over the applicable period benefited, which generally is the contract life. If, however, the amortization period is less than one year, we expense such costs in the period incurred. Contract fulfillment costs, such as costs for installation activities for B2B customers, are recognized as assets and amortized to other operating costs over the applicable period benefited, which is generally the substantive contract term for the related service contract.

Promotional Discounts. For subscriber promotions, such as discounted or free services during an introductory period, revenue is recognized uniformly over the contractual period if the contract has substantive termination penalties. If a contract does not have substantive termination penalties, revenue is recognized only to the extent of the discounted monthly fees charged to the subscriber, if any.

Subscriber Advance Payments. Payments received in advance for the services we provide are deferred and recognized as revenue when the associated services are provided.

Sales and Other Value-Added Taxes (**VAT**). Revenue is recorded net of applicable sales and other VAT.

For additional information regarding our revenue recognition and related costs, see note 4. For a disaggregation of our revenue by major category and by reportable and geographic segment, see note 18.

Share-based Compensation

We recognize all share-based payments from Liberty Global to employees of our subsidiaries, including grants of employee share-based incentive awards, based on their grant-date fair values and Liberty Global's estimates of forfeitures. We recognize the grant-date fair value of outstanding awards as a charge to operations over the vesting period. Payroll taxes incurred in connection with the vesting or exercise of Liberty Global's share-based incentive awards are recorded as a component of share-based compensation expense in our consolidated statements of operations.

We use the straight-line method to recognize share-based compensation expense for Liberty Global's outstanding share awards to employees of our subsidiaries that do not contain a performance condition and the accelerated expense attribution method for our outstanding share awards that contain a performance condition and vest on a graded basis.

The grant date fair values for options, share appreciation rights (**SARs**) and performance-based share appreciation rights (**PSARs**) are estimated using the Black-Scholes option pricing model, and the grant-date fair values for restricted share units (**RSUs**) and performance-based restricted share units (**PSUs**) are based upon the closing share price of Liberty Global ordinary shares on the date of grant. Liberty Global calculates the expected life of options and SARs granted by Liberty Global to employees based on historical exercise trends. The expected volatility for Liberty Global options and SARs related to Liberty Global Shares is generally based on a combination of (i) historical volatilities of Liberty Global Shares for a period equal to the expected average life of the awards and (ii) volatilities implied from publicly-traded options for Liberty Global Shares.

For additional information regarding our share-based compensation, see note 12.

Litigation Costs

Legal fees and related litigation costs are expensed as incurred.

(4) Revenue Recognition and Related Costs

Contract Balances

If we transfer goods or services to a customer but do not have an unconditional right to payment, we record a contract asset. Contract assets typically arise from the uniform recognition of introductory promotional discounts over the contract period and accrued revenue for handset sales. Our contract assets were £11.3 million and £23.8 million as of December 31, 2019 and 2018, respectively. The current and long-term portions of our contract asset balances are included within other current assets and other assets, net, respectively, on our consolidated balance sheets.

We record deferred revenue when we receive payment prior to transferring goods or services to a customer. We primarily defer revenue for (i) installation and other upfront services and (ii) other services that are invoiced prior to when services are provided. Our deferred revenue balances were £380.1 million and £396.5 million as of December 31, 2019 and 2018, respectively. The decrease in deferred revenue during 2019 is primarily due to £365.2 million of revenue recognized that was included in our deferred revenue balance at December 31, 2018, partially offset by advanced billings. The long-term portions of our deferred revenue balances are included within other long-term liabilities on our consolidated balance sheets.

Contract Costs

Our aggregate assets associated with incremental costs to obtain and fulfill our contracts were £53.4 million and £44.4 million at December 31, 2019 and 2018, respectively. The current and long-term portions of our assets related to contract costs are included within other current assets and other assets, net, respectively, on our consolidated balance sheets. During 2019 and 2018, we amortized £60.0 million and £57.6 million, respectively, to operating costs and expenses related to these assets.

Unsatisfied Performance Obligations

A large portion of our revenue is derived from customers who are not subject to contracts. Revenue from customers who are subject to contracts is generally recognized over the term of such contracts, which is typically 12 months for our residential service contracts, one to three years for our mobile service contracts and one to five years for our B2B service contracts.

(5) Derivative Instruments

In general, we enter into derivative instruments to protect against (i) increases in the interest rates on our variable-rate debt and (ii) foreign currency movements, particularly with respect to borrowings that are denominated in a currency other than the functional currency of the borrowing entity. In this regard, we have entered into various derivative instruments to manage interest rate exposure and foreign currency exposure with respect to the United States (**U.S.**) dollar (**$**), the euro (**€**) and the Indian rupee. We do not apply hedge accounting to our derivative instruments. Accordingly, changes in the fair values of most of our derivative instruments are recorded in realized and unrealized gains or losses on derivative instruments, net, in our consolidated statements of operations.

The following table provides details of the fair values of our derivative instrument assets and liabilities:

	December 31, 2019			December 31, 2018		
	Current	Long-term	Total	Current	Long-term	Total
	in millions					
Assets (a):						
Cross-currency and interest rate derivative contracts (b)	£ 82.5	£ 431.1	£ 513.6	£ 141.4	£ 743.5	£ 884.9
Foreign currency forward and option contracts	—	—	—	0.1	—	0.1
Foreign currency forward contracts — related-party	—	—	—	1.6	—	1.6
Total	£ 82.5	£ 431.1	£ 513.6	£ 143.1	£ 743.5	£ 886.6
Liabilities (a):						
Cross-currency and interest rate derivative contracts (b)	£ 133.6	£ 402.8	£ 536.4	£ 81.9	£ 292.7	£ 374.6

(a) Our current derivative liabilities, long-term derivative assets and long-term derivative liabilities are included in other current liabilities, other assets, net, and other long-term liabilities, respectively, on our consolidated balance sheets.

(b) We consider credit risk relating to our and our counterparties' nonperformance in the fair value assessment of our derivative instruments. In all cases, the adjustments take into account offsetting liability or asset positions. The changes in the credit risk valuation adjustments associated with our cross-currency and interest rate derivative contracts resulted in net gains (losses) of £45.3 million, (£31.8 million) and £78.3 million during 2019, 2018 and 2017, respectively. These amounts are included in realized and unrealized gains (losses) on derivative instruments, net, in our consolidated statements of operations. For further information regarding our fair value measurements, see note 6.

The details of our realized and unrealized gains (losses) on derivative instruments, net, are as follows:

	Year ended December 31,		
	2019	2018	2017
		in millions	
Cross-currency and interest rate derivative contracts	£ (160.0)	£ 470.0	£ (525.2)
Foreign currency forward and option contracts:			
Third-party	0.5	—	—
Related-party	(0.9)	1.3	(2.2)
Total	£ (160.4)	£ 471.3	£ (527.4)

The net cash received or paid related to our derivative instruments is classified as an operating, investing or financing activity in our consolidated statements of cash flows based on the objective of the derivative instrument and the classification of the applicable underlying cash flows. For derivative contracts that are terminated prior to maturity, the cash paid or received upon termination that relates to future periods is classified as a financing activity. The following table sets forth the classification of the net cash inflows (outflows) of our derivative instruments:

	Year ended December 31,		
	2019	2018	2017
		in millions	
Operating activities	£ 120.7	£ 135.5	£ 45.6
Financing activities	96.2	74.6	(0.4)
Total	£ 216.9	£ 210.1	£ 45.2

Counterparty Credit Risk

We are exposed to the risk that the counterparties to our derivative instruments will default on their obligations to us. We manage these credit risks through the evaluation and monitoring of the creditworthiness of, and concentration of risk with, the respective counterparties. In this regard, credit risk associated with our derivative instruments is spread across a relatively broad counterparty base of banks and financial institutions. Collateral is generally not posted by either party under our derivative instruments. At December 31, 2019, our exposure to counterparty credit risk included derivative assets with an aggregate fair value of £113.9 million.

We have entered into derivative instruments under master agreements with each counterparty that contain master netting arrangements that are applicable in the event of early termination by either party to such derivative instrument. The master netting arrangements are limited to the derivative instruments and derivative-related debt instruments, governed by the relevant master agreement and are independent of similar arrangements. For additional information regarding our derivative-related debt, see note 8.

Under our derivative contracts, it is generally only the non-defaulting party that has a contractual option to exercise early termination rights upon the default of the other counterparty and to set off other liabilities against sums due upon such termination. However, in an insolvency of a derivative counterparty, under the laws of certain jurisdictions, the defaulting counterparty or its insolvency representatives may be able to compel the termination of one or more derivative contracts and trigger early termination payment liabilities payable by us, reflecting any mark-to-market value of the contracts for the counterparty. Alternatively, or in addition, the insolvency laws of certain jurisdictions may require the mandatory set off of amounts due under such derivative contracts against present and future liabilities owed to us under other contracts between us and the relevant counterparty. Accordingly, it is possible that we may be subject to obligations to make payments, or may have present or future liabilities owed to us partially or fully discharged by set off as a result of such obligations, in the event of the insolvency of a derivative counterparty, even though it is the counterparty that is in default and not us. To the extent that we are required to make such payments, our ability to do so will depend on our liquidity and capital resources at the time. In an insolvency of a defaulting counterparty, we will be an unsecured creditor in respect of any amount owed to us by the defaulting counterparty, except to the extent of the value of any collateral we have obtained from that counterparty.

In addition, where a counterparty is in financial difficulty, under the laws of certain jurisdictions, the relevant regulators may be able to (i) compel the termination of one or more derivative instruments, determine the settlement amount and/or compel, without any payment, the partial or full discharge of liabilities arising from such early termination that are payable by the relevant counterparty or (ii) transfer the derivative instruments to an alternative counterparty.

Details of our Derivative Instruments

Cross-currency Derivative Contracts

We generally match the denomination of our borrowings with the functional currency of the supporting operations or, when it is more cost effective, we provide for an economic hedge against foreign currency exchange rate movements by using derivative instruments to synthetically convert unmatched debt into the applicable underlying currency. At December 31, 2019, substantially all of our debt was either directly or synthetically matched to the functional currency of the borrowing entity. The following table sets forth the total notional amounts and the related weighted average remaining contractual lives of our cross-currency swap contracts at December 31, 2019:

Notional amount due from counterparty		Notional amount due to counterparty			Weighted average remaining life
in millions					in years
$	10,857.5	£	8,003.6	(a)	5.6
£	2,296.2	$	3,300.0	(b)	5.1
€	246.3	$	271.1		3.0

(a) Includes certain derivative instruments that are "forward-starting," such that the initial exchange occurs at a date subsequent to December 31, 2019. These instruments are typically entered into in order to extend existing hedges without the need to amend existing contracts.

(b) This derivative instrument does not involve the exchange of notional amounts at the inception and maturity of the instrument. Accordingly, the only cash flows associated with this derivative instrument are coupon-related payments and receipts.

Interest Rate Swap Contracts

The following table sets forth the total pound sterling equivalent of the notional amounts and the related weighted average remaining contractual lives of our interest rate swap contracts at December 31, 2019:

Pay fixed rate (a)			Receive fixed rate (a)		
Notional amount		Weighted average remaining life	Notional amount		Weighted average remaining life
in millions		in years	in millions		in years
£	16,373.0	2.7	£	8,702.9	4.4

(a) Includes forward-starting derivative instruments.

Interest Rate Swap Options

We have entered into various interest rate swap options (**swaptions**), which give us the right, but not the obligation, to enter into certain interest rate swap contracts at set dates in the future, with each such contract having a life of no more than three years. At the transaction date, the strike rate of each of these contracts was above the corresponding market rate. The following table sets forth certain information regarding our swaptions at December 31, 2019:

Notional amount		Underlying swap currency	Weighted average option expiration period (a)	Weighted average strike rate (b)
in millions			in years	
£	5,342.4	£	1.0	2.40%
£	364.0	€	0.6	1.96%

(a) Represents the weighted average period until the date on which we have the option to enter into the interest rate swap contracts.

(b) Represents the weighted average interest rate that we would pay if we exercised our option to enter into the interest rate swap contracts.

Basis Swaps

Our basis swaps involve the exchange of attributes used to calculate our floating interest rates, including (i) the benchmark rate, (ii) the underlying currency and/or (iii) the borrowing period. We typically enter into these swaps to optimize our interest rate profile based on our current evaluations of yield curves, our risk management policies and other factors. At December 31, 2019, the total pound sterling equivalent of the notional amount due from the counterparty, including forward-starting derivative instruments, was £3,388.1 million and the related weighted average remaining contractual life of our basis swap contracts was 0.5 years.

Interest Rate Cap

We enter into interest rate cap agreements that lock in a maximum interest rate if variable rates rise, but also allow our company to benefit from declines in market rates. At December 31, 2019, the pound sterling equivalent notional amount of our interest rate cap was £835.0 million.

Impact of Derivative Instruments on Borrowing Costs

Excluding forward-starting instruments and swaptions, the impact of the derivative instruments that mitigate our foreign currency and interest rate risk, as described above, was a decrease of 20 basis points to our borrowing costs as of December 31, 2019.

Foreign Currency Forwards and Options

We enter into foreign currency forward and option contracts with respect to non-functional currency exposure. As of December 31, 2019, the total of the notional amount of our foreign currency forward and option contracts was £11.0 million.

(6) Fair Value Measurements

We use the fair value method to account for (i) our derivative instruments and (ii) certain instruments that we classify as debt. The reported fair values of these instruments as of December 31, 2019 are unlikely to represent the value that will be paid or received upon the ultimate settlement or disposition of these assets and liabilities.

GAAP provides for a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value into three broad levels. Level 1 inputs are quoted market prices in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date. Level 2 inputs are inputs other than quoted market prices included within Level 1 that are observable for the asset or liability, either directly or indirectly. Level 3 inputs are unobservable inputs for the asset or liability. We record transfers of assets or liabilities into or out of Levels 1, 2 or 3 at the beginning of the quarter during which the transfer occurred. During 2019, no such transfers were made.

All of our Level 2 inputs (interest rate futures, swap rates and certain of the inputs for our weighted average cost of capital calculations) and certain of our Level 3 inputs (forecasted volatilities and credit spreads) are obtained from pricing services. These inputs, or interpolations or extrapolations thereof, are used in our internal models to calculate, among other items, yield curves, forward interest and currency rates and weighted average cost of capital rates. In the normal course of business, we receive market value assessments from the counterparties to our derivative contracts. Although we compare these assessments to our internal valuations and investigate unexpected differences, we do not otherwise rely on counterparty quotes to determine the fair values of our derivative instruments. The midpoints of applicable bid and ask ranges generally are used as inputs for our internal valuations.

In order to manage our interest rate and foreign currency exchange risk, we have entered into (i) various derivative instruments and (ii) certain instruments that we classify as debt, as further described in notes 5 and 8, respectively. The recurring fair value measurements of these instruments are determined using discounted cash flow models. With the exception of the inputs for certain swaptions, most of the inputs to these discounted cash flow models consist of, or are derived from, observable Level 2 data for substantially the full term of these instruments. This observable data mostly includes currency rates, interest rate futures and swap rates, which are retrieved or derived from available market data. Although we may extrapolate or interpolate this data, we do not otherwise alter this data in performing our valuations. We use a Monte Carlo based approach to incorporate a credit risk valuation adjustment in our fair value measurements to estimate the impact of both our own nonperformance risk and the nonperformance risk of our counterparties. The inputs used for our credit risk valuations, including our and our counterparties' credit spreads, represent our most significant Level 3 inputs, and these inputs are used to derive the credit risk valuation adjustments with respect to these instruments. As we would not expect these parameters to have a significant impact on the valuations of these instruments, we have determined that these valuations (other than the valuations of the aforementioned swaptions) fall under Level 2 of the fair value hierarchy. Due to the lack of Level 2 inputs for the swaption valuations, we believe these valuations fall under Level 3 of the fair value hierarchy. Our credit risk valuation adjustments with respect to our cross-currency and interest rate swaps are quantified and further explained in note 5.

Fair value measurements are also used in connection with nonrecurring valuations performed in connection with acquisition accounting and impairment assessments. The nonrecurring valuations associated with acquisition accounting primarily include the valuation of reporting units, customer relationship and other intangible assets and property and equipment. Unless a reporting unit has a readily determinable fair value, the valuation of reporting units is based at least in part on discounted cash flow analyses. With the exception of certain inputs for our weighted average cost of capital and discount rate calculations that are derived from pricing services, the inputs used in our discounted cash flow analyses, such as forecasts of future cash flows, are based on our assumptions. The valuation of customer relationships is primarily based on an excess earnings methodology, which is a form of a discounted cash flow analysis. The excess earnings methodology requires us to estimate the specific cash flows expected from the customer relationship, considering such factors as estimated customer life, the revenue expected to be generated over the life of the customer relationship, contributory asset charges and other factors. Tangible assets are typically valued using a replacement or reproduction cost approach, considering factors such as current prices of the same or similar equipment, the age of the equipment and economic obsolescence. Most of our nonrecurring valuations use significant unobservable inputs and therefore fall under Level 3 of the fair value hierarchy. We did not perform any significant nonrecurring fair value measurements during 2019 or 2018.

A summary of our assets and liabilities that are measured at fair value on a recurring basis is as follows:

		Fair value measurements at December 31, 2019 using:	
Description	**December 31, 2019**	**Significant other observable inputs (Level 2)**	**Significant unobservable inputs (Level 3)**
		in millions	
Assets:			
Derivative instruments:			
Cross-currency and interest rate derivative contracts	£ 513.6	£ 513.6	£ —
Liabilities:			
Derivative instruments:			
Cross-currency and interest rate derivative contracts	£ 536.4	£ 517.7	£ 18.7
Debt	34.4	34.4	—
Total liabilities	£ 570.8	£ 552.1	£ 18.7

		Fair value measurements at December 31, 2018 using:	
Description	**December 31, 2018**	**Significant other observable inputs (Level 2)**	**Significant unobservable inputs (Level 3)**
		in millions	
Assets:			
Derivative instruments:			
Cross-currency and interest rate derivative contracts	£ 884.9	£ 884.7	£ 0.2
Foreign currency and forward option contracts	0.1	0.1	—
Foreign currency forward contracts — related-party	1.6	1.6	—
Total assets	£ 886.6	£ 886.4	£ 0.2
Liabilities:			
Derivative instruments:			
Cross-currency and interest rate derivative contracts	£ 374.6	£ 366.2	£ 8.4
Debt	195.0	195.0	—
Total liabilities	£ 569.6	£ 561.2	£ 8.4

(7) Long-lived Assets

Property and Equipment, Net

The details of our property and equipment and the related accumulated depreciation are set forth below:

	Estimated useful life at December 31, 2019	December 31, 2019	December 31, 2018
		in millions	
Distribution systems	3 to 30 years	£ 8,749.6	£ 8,385.9
Customer premises equipment	5 years	2,238.3	2,255.5
Support equipment, buildings and land	3 to 50 years	1,718.5	1,606.4
Total property and equipment, gross		12,706.4	12,247.8
Accumulated depreciation		(6,627.7)	(5,975.6)
Total property and equipment, net		£ 6,078.7	£ 6,272.2

Depreciation expense related to our property and equipment was £1,384.1 million, £1,408.8 million and £1,433.9 million during 2019, 2018 and 2017, respectively.

During 2019, 2018 and 2017, we recorded non-cash increases to our property and equipment related to vendor financing arrangements of £838.6 million, £1,057.2 million and £1,153.2 million, respectively, which exclude related VAT of £146.5 million, £188.0 million and £215.5 million, respectively, that was also financed by our vendors under these arrangements.

Most of our property and equipment is pledged as security under our various debt instruments. For additional information, see note 8.

Goodwill

Changes in the carrying amount of our goodwill during 2019 are set forth below (in millions):

January 1, 2019	£ 6,018.4
Foreign currency translation adjustments	(12.6)
December 31, 2019	£ 6,005.8

If, among other factors, (i) our enterprise value or Liberty Global's equity values were to decline or (ii) the adverse impacts of economic, competitive, regulatory or other factors were to cause our results of operations or cash flows to be worse than anticipated, we could conclude in future periods that impairment charges are required in order to reduce the carrying values of our goodwill and, to a lesser extent, other long-lived assets. Any such impairment charges could be significant.

Changes in the carrying amount of our goodwill during 2018 are set forth below (in millions):

January 1, 2018	£ 6,014.6
Acquisitions and related adjustments	1.5
Foreign currency translation adjustments	2.3
December 31, 2018	£ 6,018.4

Intangible Assets Subject to Amortization, Net

At December 31, 2019, all of our intangible assets subject to amortization related to our customer relationships, which, as of such date, had estimated useful lives ranging from five to eight years. The details of our intangible assets subject to amortization, which are included in other assets, net, on our consolidated balance sheets, are set forth below:

	December 31, 2019	December 31, 2018
	in millions	
Gross carrying amount	£ 2,527.6	£ 2,527.9
Accumulated amortization	(2,419.6)	(2,065.7)
Net carrying amount	£ 108.0	£ 462.2

Amortization expense related to intangible assets with finite useful lives was £354.1 million, £389.4 million and £374.3 million during 2019, 2018 and 2017, respectively. Based on our amortizable intangible asset balances at December 31, 2019, we expect that amortization expense will be as follows for the next five years and thereafter. The pound sterling equivalents of such amortization expense amounts as of December 31, 2019 are presented below (in millions):

2020	£ 78.1
2021	26.9
2022	0.9
2023	0.9
2024	0.8
Thereafter	0.4
Total	£ 108.0

(8) Debt

The pound sterling equivalents of the components of our third-party debt are as follows:

	December 31, 2019		Principal amount	
	Weighted average interest rate (a)	Unused borrowing capacity (b)	December 31, 2019	December 31, 2018
			in millions	
VM Senior Secured Notes	5.34%	£ —	£ 4,461.2	£ 4,917.9
VM Credit Facilities (c) (d)	3.94%	1,000.0	4,126.7	3,609.4
Vendor financing (e)	4.96%	—	1,835.0	1,893.0
VM Senior Notes	5.34%	—	1,194.2	1,569.0
Other (f)	2.48%	—	337.1	414.1
Total third-party debt before deferred financing costs, discounts and premiums (g)	4.72%	£ 1,000.0	£ 11,954.2	£ 12,403.4

The following table provides a reconciliation of total third-party debt before deferred financing costs, discounts and premiums to total debt and finance lease obligations:

	December 31,	
	2019	2018
	in millions	
Total third-party debt before deferred financing costs, discounts and premiums	£ 11,954.2	£ 12,403.4
Deferred financing costs, discounts and premiums, net	(17.5)	(29.9)
Total carrying amount of third-party debt	11,936.7	12,373.5
Finance lease obligations (note 9)	52.9	54.2
Total third-party debt and finance lease obligations	11,989.6	12,427.7
Related-party debt (note 13)	56.7	112.7
Total debt and finance lease obligations	12,046.3	12,540.4
Current maturities of debt and finance lease obligations	(1,868.9)	(1,931.2)
Long-term debt and finance lease obligations	£ 10,177.4	£ 10,609.2

(a) Represents the weighted average interest rate in effect at December 31, 2019 for all borrowings outstanding pursuant to each debt instrument, including any applicable margin. The interest rates presented represent stated rates and do not include the impact of derivative instruments, deferred financing costs, original issue premiums or discounts and commitment fees, all of which affect our overall cost of borrowing. Including the effects of derivative instruments, original issue premiums or discounts and commitment fees, but excluding the impact of deferred financing costs, the weighted average interest rate on our aggregate third-party variable- and fixed-rate indebtedness was 4.67% at December 31, 2019. For information regarding our derivative instruments, see note 5.

(b) Unused borrowing capacity represents the maximum availability under the VM Credit Facilities (as defined and described below) at December 31, 2019 without regard to covenant compliance calculations or other conditions precedent to borrowing. At December 31, 2019, based on the most restrictive applicable leverage covenants and leverage-based restricted payment tests, the equivalent of £533.8 million of unused borrowing capacity was available to be borrowed and there were no additional restrictions on our ability to make loans or distributions from this availability to other Virgin Media subsidiaries and ultimately to Virgin Media. Upon completion of the relevant December 31, 2019 compliance reporting requirements, and based on the most restrictive applicable leverage covenants and leverage-based restricted payment tests, we expect the equivalent of £921.6 million of unused borrowing capacity will be available, with no additional restriction to loan or distribute. Our above expectations do not consider any actual or potential changes to our borrowing levels or any amounts loaned or distributed subsequent to December 31, 2019, or the impact of additional amounts that may be available to borrow, loan or distribute under certain defined baskets within the VM Credit Facilities.

(c) Amounts include £103.6 million and £41.9 million at December 31, 2019 and 2018, respectively, of borrowings pursuant to excess cash facilities under the VM Credit Facilities. These borrowings are owed to certain non-consolidated special purpose financing entities that have issued notes to finance the purchase of receivables due from our company to certain other third parties for amounts that we and our subsidiaries have vendor financed. To the extent the proceeds from these notes exceed the amount of vendor financed receivables available to be purchased, the excess proceeds are used to fund these excess cash facilities.

(d) Unused borrowing capacity under the VM Credit Facilities relates to a multi-currency revolving facility with a maximum borrowing capacity equivalent to £1,000.0 million (the **VM Revolving Facility**), which was undrawn at December 31, 2019. During 2019, the VM Revolving Facility was amended and as a result, VM Revolving Facility A and VM Revolving Facility B were cancelled in full and replaced with a single revolving facility maturing on January 31, 2026.

(e) Represents amounts owed pursuant to interest-bearing vendor financing arrangements that are used to finance certain of our property and equipment additions and operating expenses. These obligations are generally due within one year and include VAT that was paid on our behalf by the vendor. Repayments of vendor financing obligations are included in repayments and repurchases of third-party debt and finance lease obligations in our consolidated statements of cash flows.

(f) Includes amounts associated with certain derivative-related borrowing instruments, including £34.4 million and £195.0 million at December 31, 2019 and 2018, respectively, carried at fair value. These instruments mature at various dates through January 2025. The fair value of this debt has been reduced by credit risk valuation adjustments resulting in a net gain (loss) of (£1.2 million) and £29.3 million during 2019 and 2018, respectively, which are included in realized and unrealized gains (losses) due to changes in fair values of certain debt, net, in our consolidated statements of operations. For further information regarding our fair value measurements, see note 6. In addition, amounts include £199.5 million and £177.3 million at December 31, 2019 and 2018, respectively, of debt collateralized by certain trade receivables of our company.

(g) As of December 31, 2019 and 2018, our debt had an estimated fair value of £12.3 billion and £12.1 billion, respectively. The estimated fair values of our debt instruments are generally determined using the average of applicable bid and ask prices (mostly Level 1 of the fair value hierarchy) or, when quoted market prices are unavailable or not considered indicative of fair value, discounted cash flow models (mostly Level 2 of the fair value hierarchy). The discount rates used in the cash flow models are based on the market interest rates and estimated credit spreads, to the extent available, and other relevant factors. For additional information regarding fair value hierarchies, see note 6.

General Information

Credit Facilities. We have entered into a senior secured credit facility agreement with certain financial institutions and senior credit facility agreements with certain non-consolidated special purpose financing entities (as described under *VM Credit Facilities* below) (the "**credit facilities**"). Our credit facilities contain certain covenants, the more notable of which are as follows:

- Our credit facilities contain certain consolidated net leverage ratios, as specified in the relevant credit facility, which are required to be complied with (i) on an incurrence basis and/or (ii) in respect of our senior secured credit facilities, when the associated revolving credit facilities have been drawn, on a net basis, beyond a specified percentage of the total available revolving credit commitments, on a maintenance basis;

- Subject to certain customary and agreed exceptions, our credit facilities contain certain restrictions which, among other things, restrict our ability to (i) incur or guarantee certain financial indebtedness, (ii) make certain disposals and acquisitions, (iii) create certain security interests over our assets and (iv) make certain restricted payments to our direct and/or indirect parent companies through dividends, loans or other distributions;

- Our credit facilities require that certain subsidiaries of Virgin Media (i) guarantee the payment of all sums payable under the relevant credit facility and (ii) in respect of our senior secured credit facilities, grant first-ranking security over substantially all of their assets to secure the payment of all sums payable thereunder;

- In addition to certain mandatory prepayment events, the instructing group of lenders under our senior secured credit facilities, under certain circumstances, may cancel the group's commitments thereunder and declare the loan(s) thereunder due and payable at par after the applicable notice period following the occurrence of a change of control (as specified in the senior secured credit facilities);

- In addition to certain mandatory prepayment events, the individual lender under each of our senior credit facilities, under certain circumstances, may cancel its commitments thereunder and declare the loan(s) thereunder due and payable at a price of 101% after the applicable notice period following the occurrence of a change of control (as specified in the relevant senior credit facility);

- Our credit facilities contain certain customary events of default, the occurrence of which, subject to certain exceptions, materiality qualifications and cure rights, would allow the instructing group of lenders to (i) cancel the total commitments, (ii) declare that all or part of the loans be payable on demand and/or (iii) accelerate all outstanding loans and terminate their commitments thereunder;

- Our credit facilities require that we observe certain affirmative and negative undertakings and covenants, which are subject to certain materiality qualifications and other customary and agreed exceptions;

- In addition to customary default provisions, our senior secured credit facilities include cross-default provisions with respect to our other indebtedness, subject to agreed minimum thresholds and other customary and agreed exceptions; and

- Our senior credit facilities provide that any failure to pay principal at its stated maturity (after the expiration of any applicable grace period) of, or any acceleration with respect to, other indebtedness of the borrower or certain subsidiaries over agreed minimum thresholds (as specified under the applicable senior credit facility), is an event of default under the respective senior credit facility.

Senior and Senior Secured Notes. Virgin Media Finance PLC (**Virgin Media Finance**) and Virgin Media Secured Finance PLC (**Virgin Media Secured Finance**), each a wholly-owned subsidiary of Virgin Media, have issued certain senior and senior secured notes, respectively. In general, our senior and senior secured notes (i) are senior obligations of the issuer of such notes that rank equally with all of the existing and future senior debt of such issuer and are senior to all existing and future subordinated debt of such issuer, (ii) contain, in most instances, certain guarantees from Virgin Media and certain other subsidiaries of Virgin Media (as specified in the applicable indenture) and (iii) with respect to our senior secured notes, are secured by certain pledges or liens over the assets and/or shares of our subsidiaries. In addition, the indentures governing our senior and senior secured notes contain certain covenants, the more notable of which are as follows:

- Our notes provide that any failure to pay principal at its stated maturity (after the expiration of any applicable grace period) of, or any acceleration with respect to, other indebtedness of the issuer or certain subsidiaries over agreed minimum thresholds (as specified under the applicable indenture), is an event of default under the respective notes;

- Subject to certain materiality qualifications and other customary and agreed exceptions, our notes contain (i) certain customary incurrence-based covenants and (ii) certain restrictions that, among other things, restrict our ability to (a) incur or guarantee certain financial indebtedness, (b) make certain disposals and acquisitions, (c) create certain security interests over our assets and (d) make certain restricted payments to our direct and/or indirect parent companies through dividends, loans or other distributions;

- If we or certain of our subsidiaries (as specified in the applicable indenture) sell certain assets, we must, subject to certain materiality qualifications and other customary and agreed exceptions, offer to repurchase the applicable notes at par, or if a change of control (as specified in the applicable indenture) occurs, we must offer to repurchase all of the relevant notes at a redemption price of 101%; and

- Our senior secured notes contain certain early redemption provisions including, for certain senior secured notes, the ability to, during each 12-month period commencing on the issue date for such notes until the applicable call date (**Call Date**), redeem up to 10% of the original principal amount of the notes at a redemption price equal to 103% of the principal amount of the notes to be redeemed plus accrued and unpaid interest.

VM Notes

The details of the outstanding notes of Virgin Media as of December 31, 2019 are summarized in the following table:

VM Notes	Maturity	Interest rate	Original issue amount	Outstanding principal amount: Borrowing currency	Outstanding principal amount: Pound sterling equivalent	Carrying value (a)
				in millions		
VM Senior Notes:						
2022 VM Senior Notes:						
2022 VM 4.875% Dollar Senior Notes	February 15, 2022	4.875%	$ 118.7	$ 71.6	£ 54.0	£ 54.1
2022 VM 5.25% Dollar Senior Notes	February 15, 2022	5.250%	$ 95.0	$ 51.5	38.8	38.9
2022 VM Sterling Senior Notes	February 15, 2022	5.125%	£ 44.1	£ 44.1	44.1	44.2
2024 VM Dollar Senior Notes	October 15, 2024	6.000%	$ 500.0	$ 497.0	374.7	372.6
2025 VM Senior Notes:						
2025 VM Euro Senior Notes	January 15, 2025	4.500%	€ 460.0	€ 460.0	389.5	386.7
2025 VM Dollar Senior Notes	January 15, 2025	5.750%	$ 400.0	$ 388.7	293.1	291.4
VM Senior Secured Notes:						
2025 VM Sterling Senior Secured Notes (b)	January 15, 2025	6.000%	£ 521.3	£ 521.3	521.3	539.9
2026 VM Dollar Senior Secured Notes	August 15, 2026	5.500%	$ 750.0	$ 750.0	565.5	561.7
2027 Senior Secured Notes:						
2027 VM 4.875% Sterling Senior Secured Notes	January 15, 2027	4.875%	£ 525.0	£ 525.0	525.0	523.6
2027 VM 5.0% Sterling Senior Secured Notes	April 15, 2027	5.000%	£ 675.0	£ 675.0	675.0	672.1
2029 Senior Secured Notes:						
2029 VM 6.25% Sterling Senior Secured Notes	March 28, 2029	6.250%	£ 400.0	£ 360.0	360.0	360.7
2029 VM Dollar Senior Secured Notes	May 15, 2029	5.500%	$ 1,425.0	$ 1,425.0	1,074.4	1,077.3
2029 VM 5.25% Sterling Senior Secured Notes	May 15, 2029	5.250%	£ 340.0	£ 340.0	340.0	340.1
2030 VM Sterling Senior Secured Notes	January 15, 2030	4.250%	£ 400.0	£ 400.0	400.0	396.4
Total					£ 5,655.4	£ 5,659.7

(a) Amounts are net of deferred financing costs, discounts and premiums, including amounts recorded in connection with the acquisition accounting for Virgin Media, where applicable.

(b) Interest on the 2025 VM Sterling Senior Secured Notes initially accrues at a rate of 6.0% up to January 15, 2021 and at a rate of 11.0% thereafter. In light of these terms, the maturity table included at the end of this note assumes that the 2025 VM Sterling Senior Secured Notes will be repaid in 2021.

Subject to the circumstances described below, the VM Notes are non-callable prior to the applicable Call Date as presented in the below table. At any time prior to the respective Call Date, Virgin Media may redeem some or all of the applicable notes by paying a "make-whole" premium, which is the present value of all remaining scheduled interest payments to the applicable Call Date using the discount rate (as specified in the applicable indenture) as of the redemption date plus 50 basis points.

VM Notes	Call Date
2022 VM Senior Notes	(a)
2024 VM Dollar Senior Notes	October 15, 2019
2025 VM Senior Notes	January 15, 2020
2025 VM Sterling Senior Secured Notes	January 15, 2021
2026 VM Dollar Senior Secured Notes	August 15, 2021
2027 VM 4.875% Sterling Senior Secured Notes	January 15, 2021
2027 VM 5.0% Sterling Senior Secured Notes	April 15, 2022
2029 VM 6.25% Sterling Senior Secured Notes	January 15, 2021
2029 VM Dollar Senior Secured Notes	May 15, 2024
2029 VM 5.25% Sterling Senior Secured Notes	May 15, 2024
2030 VM Sterling Senior Secured Notes	October 15, 2024

(a) The 2022 VM Senior Notes are non-callable. At any time prior to maturity, some or all of these notes may be redeemed by paying a "make-whole" premium, which is the present value of all remaining scheduled interest payments to the respective maturity date.

Virgin Media may redeem some or all of the VM Senior Notes and the VM Senior Secured Notes (with the exception of the 2022 VM Senior Notes) at the following redemption prices (expressed as a percentage of the principal amount) plus accrued and unpaid interest and additional amounts (as specified in the applicable indenture), if any, to the applicable redemption date, as set forth below:

	Redemption Price					
	2024 VM Dollar Senior Notes	**2025 VM Dollar Senior Notes**	**2025 VM Euro Senior Notes**	**2025 VM Sterling Senior Secured Notes**	**2026 VM Dollar Senior Secured Notes**	**2027 VM 4.875% Sterling Senior Secured Notes**
12-month period commencing	October 15	January 15	January 15	January 15	August 15	January 15
2020	102.000%	102.875%	102.250%	N.A.	N.A.	N.A.
2021	101.000%	101.917%	101.500%	105.000%	102.750%	102.438%
2022	100.000%	100.958%	100.750%	102.500%	101.375%	101.219%
2023	100.000%	100.000%	100.000%	100.000%	100.688%	100.609%
2024 and thereafter	N.A.	100.000%	100.000%	100.000%	100.000%	100.000%

	Redemption Price				
	2027 VM 5.0% Sterling Senior Secured Notes	2029 VM 6.25% Sterling Senior Secured Notes	2029 VM Dollar Senior Secured Notes	2029 VM 5.25% Sterling Senior Secured Notes	2030 VM Sterling Senior Secured Notes
12-month period commencing	April 15	January 15	May 15	May 15	October 15
2020	N.A.	N.A.	N.A.	N.A.	N.A.
2021	N.A.	103.125%	N.A.	N.A.	N.A.
2022	102.500%	102.083%	N.A.	N.A.	N.A.
2023	101.250%	101.042%	N.A.	N.A.	N.A.
2024	100.625%	100.000%	102.750%	102.625%	102.125%
2025	100.000%	100.000%	101.375%	101.313%	101.063%
2026	100.000%	100.000%	100.000%	100.000%	100.531%
2027 and thereafter ...	N.A.	100.000%	100.000%	100.000%	100.000%

VM Credit Facilities

The VM Credit Facilities are the senior and senior secured credit facilities of certain subsidiaries of Virgin Media. The details of our borrowings under the VM Credit Facilities as of December 31, 2019 are summarized in the following table:

VM Credit Facilities	Maturity	Interest rate	Facility amount (in borrowing currency)	Outstanding principal amount	Unused borrowing capacity	Carrying value (a)
				in millions		
Senior Secured Facilities:						
L (b)..................	January 15, 2027	LIBOR +3.25%	£ 400.0	£ 400.0	£ —	£ 397.0
M (b)	November 15, 2027	LIBOR +3.25%	£ 500.0	500.0	—	494.7
N (b)..................	January 31, 2028	LIBOR +2.50%	$ 3,300.0	2,488.1	—	2,475.1
O (c)	January 31, 2029	EURIBOR +2.50%	€ 750.0	635.0	—	631.6
VM Revolving Facility (d)........	January 31, 2026	LIBOR +2.75%	£ 1,000.0	—	1,000.0	—
Total Senior Secured Facilities				4,023.1	1,000.0	3,998.4
Senior Facilities:						
VM Financing Facility I (e)......	September 15, 2024	5.50%	£ 91.4	91.4	—	91.4
VM Financing Facility II (e)	April 15, 2023	5.75%	£ 12.2	12.2	—	12.2
Total Senior Facilities				103.6	—	103.6
Total........				£ 4,126.7	£ 1,000.0	£ 4,102.0

(a) Amounts are net of deferred financing costs and discounts, where applicable.

(b) VM Facility L, VM Facility M and VM Facility N are each subject to a LIBOR floor of 0.00%.

(c) VM Facility O is subject to a EURIBOR floor of 0.00%.

(d) The VM Revolving Facility has a fee on unused commitments of 1.1% per year.

(e) Amounts represent borrowings that are owed to certain non-consolidated special purpose financing entities that have issued notes to finance the purchase of receivables due from our company to certain other third parties for amounts that we and our subsidiaries have vendor financed. To the extent that the proceeds from these notes exceed the amount of vendor financed receivables available to be purchased, the excess proceeds are used to fund these excess cash facilities.

Financing Transactions

Below we provide summary descriptions of certain financing transactions completed during 2019, 2018 and 2017. Certain of our financing transactions may include non-cash borrowings and repayments. During 2019, 2018 and 2017, non-cash borrowings and repayments aggregated £2,587.0 million, £99.3 million and £3,966.5 million, respectively.

2019 Financing Transactions

In May 2019, we issued (i) $825.0 million (£622.0 million) principal amount of 2029 VM Dollar Senior Secured Notes and (ii) £300.0 million principal amount of 2029 VM 5.25% Sterling Senior Secured Notes. Each series of notes was issued at par and matures on May 15, 2029. The net proceeds from the issuance of these notes were used to redeem in full (a) £387.0 million outstanding principal amount under the 2025 VM 5.5% Sterling Senior Secured Notes, (b) $354.5 million (£267.3 million) outstanding principal amount under the 2025 VM Dollar Senior Secured Notes and (c) £300.0 million outstanding principal amount under the 2024 VM Sterling Senior Notes. In connection with these transactions, we recognized a loss on debt modification and extinguishment of £37.4 million related to (1) the payment of £34.0 million of redemption premiums and (2) the write-off of £3.4 million of unamortized deferred financing costs and discounts.

In July 2019, we issued an additional $600.0 million (£452.4 million) principal amount of 2029 VM Dollar Senior Secured Notes at 101.75% of par. The net proceeds from the issuance of these notes were used to redeem in full (i) $447.9 million (£337.7 million) outstanding principal amount under the 2021 VM Dollar Senior Secured Notes and (ii) £107.1 million outstanding principal amount under the 2021 VM Sterling Senior Secured Notes. In August 2019, we issued an additional £40.0 million principal amount of 2029 VM 5.25% Sterling Senior Secured Notes at 103% of par. The net proceeds from the issuance of these notes were used to redeem an equal outstanding principal amount of 2029 VM 6.25% Sterling Senior Secured Notes. In connection with these transactions, we recognized a net loss on debt modification and extinguishment of £23.3 million related to (a) the payment of £25.7 million of redemption premiums and (b) the write-off of £2.4 million of net unamortized deferred financing costs, discounts and premiums.

In October 2019, we (i) entered into VM Facility N, a $3,300.0 million (£2,488.1 million) term loan facility, and VM Facility O, a €750.0 million (£635.0 million) term loan facility, both issued at 99.75% of par, and (ii) issued £400.0 million principal amount of 2030 VM Sterling Senior Secured Notes at par. The net proceeds from these transactions, together with certain other funds, were used to (a) prepay in full the $3,400.0 million (£2,563.5 million) outstanding principal amount on VM Facility K and (b) redeem in full (1) $1,000.0 million (£754.0 million) outstanding principal amount of the 2026 VM 5.25% Dollar Senior Secured Notes and (2) £300.0 million outstanding principal amount of the 2025 VM 5.125% Sterling Senior Secured Notes. In connection with these transactions, we recognized a net loss on debt modification and extinguishment of £53.3 million related to (A) the payment of £36.3 million of redemption premiums and (B) the write-off of £17.0 million of net unamortized deferred financing costs, discounts and premiums.

2018 and 2017 Financing Transactions

During 2018 and 2017, we completed a number of financing transactions that generally resulted in lower interest rates and extended maturities. In connection with these transactions, we recognized losses on debt modification and extinguishment, net, of £28.3 million and £52.4 million during 2018 and 2017, respectively. These losses include (i) the payment of redemption premiums of £22.0 million and £26.0 million, respectively, (ii) the write-off of unamortized deferred financing costs and discounts of £6.3 million and £31.0 million, respectively, (iii) the write-off of £5.7 million of unamortized premiums in 2017 and (iv) the payment of third-party costs of £1.1 million in 2017.

Maturities of Debt

The pound sterling equivalents of the maturities of our debt as of December 31, 2019 are presented below:

	Third-party debt	Related-party debt	Total
		in millions	
Year ending December 31:			
2020	£ 1,864.1	£ —	£ 1,864.1
2021 (a)	547.5	56.7	604.2
2022	191.3	—	191.3
2023	94.5	—	94.5
2024	587.8	—	587.8
Thereafter	8,669.0	—	8,669.0
Total debt maturities (b)	11,954.2	56.7	12,010.9
Deferred financing costs, discounts and premiums, net	(17.5)	—	(17.5)
Total debt	£ 11,936.7	£ 56.7	£ 11,993.4
Current portion	£ 1,864.1	£ —	£ 1,864.1
Noncurrent portion	£ 10,072.6	£ 56.7	£ 10,129.3

(a) Interest on the 2025 VM Sterling Senior Secured Notes initially accrues at a rate of 6.0% up to January 15, 2021 and at a rate of 11.0% thereafter. In light of these terms, the above maturity table assumes that the 2025 VM Sterling Senior Secured Notes will be repaid in 2021.

(b) Amounts include vendor financing obligations of £1,835.0 million, as set forth below (in millions):

Year ending December 31:	
2020	£ 1,762.6
2021	26.3
2022	18.5
2023	16.7
2024	10.9
Total vendor financing maturities	£ 1,835.0
Current portion	£ 1,762.6
Noncurrent portion	£ 72.4

(9) Leases

General

We enter into operating and finance leases for network equipment, real estate and vehicles. We provide residual value guarantees on certain of our vehicle leases.

Lease Balances

A summary of our ROU assets and lease liabilities as of December 31, 2019 is set forth below:

	ROU Assets	Lease Liabilities
	in millions	
Operating leases (a)(b)	£ 144.2	£ 157.6
Finance leases (c)(d)	49.4	52.9
Total	£ 193.6	£ 210.5

(a) Our operating lease ROU assets are included in other assets, net, on our consolidated balance sheet. At December 31, 2019, the weighted average remaining lease term for operating leases was 8.6 years and the weighted average discount rate was 4.4%. During 2019, we recorded additions to our ROU assets associated with operating leases of £41.6 million.

(b) The current and long-term portions of our operating lease liabilities are included within other current liabilities and other long-term liabilities, respectively, on our consolidated balance sheet.

(c) Our finance lease ROU assets are included in property and equipment, net, on our consolidated balance sheet. At December 31, 2019, the weighted average remaining lease term for finance leases was 28.5 years and the weighted average discount rate was 6.7%. As of December 31, 2018, we had £49.8 million of finance lease ROU assets included on our consolidated balance sheet. During 2019, 2018 and 2017, we recorded additions to our ROU assets associated with finance leases of £5.5 million, £6.8 million and £11.5 million.

(d) The current and long-term portions of our finance lease liabilities are included within current portion of debt and finance lease liabilities and long-term debt and finance lease liabilities, respectively, on our consolidated balance sheets. As of December 31, 2018, we had £54.2 million of finance lease liabilities included on our consolidated balance sheet.

A summary of our aggregate lease expense recorded during 2019 is set forth below (in millions):

Finance lease expense:	
Depreciation and amortization	£ 8.5
Interest expense	4.1
Total finance lease expense	12.6
Operating lease expense (a)	37.1
Total lease expense	£ 49.7

(a) Our operating lease expense is included in other operating expenses, SG&A expenses and impairment, restructuring and other operating items, net, in our consolidated statements of operations.

A summary of our cash outflows from operating and finance leases recorded during 2019 is set forth below (in millions):

Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash outflows from operating leases	£	39.4
Operating cash outflows from finance leases		4.1
Financing cash outflows from finance leases		7.6
Total cash outflows from operating and finance leases	£	51.1

Maturities of our operating and finance lease liabilities as of December 31, 2019 are presented below. Amounts represent the pound sterling equivalents based on December 31, 2019 exchange rates:

	Operating leases	Finance leases
	in millions	
Year ending December 31:		
2020	£ 34.2	£ 8.6
2021	30.1	7.8
2022	24.6	9.7
2023	21.1	7.2
2024	16.9	3.5
Thereafter	53.8	134.6
Total payments	180.7	171.4
Less: present value discount	(23.1)	(118.5)
Present value of lease payments	£ 157.6	£ 52.9
Current portion	£ 30.5	£ 4.8
Noncurrent portion	£ 127.1	£ 48.1

Maturities of our operating and finance lease liabilities as of December 31, 2018 are presented below. Amounts represent the pound sterling equivalents based on December 31, 2018 exchange rates:

	Operating leases	Finance leases
	in millions	
Year ending December 31:		
2019	£ 36.8	£ 9.6
2020	29.6	7.3
2021	24.9	7.0
2022	20.3	8.8
2023	17.2	5.4
Thereafter	52.1	135.6
Total payments	£ 180.9	173.7
Amounts representing interest		(119.5)
Total finance leases		£ 54.2
Current portion		£ 5.7
Noncurrent portion		£ 48.5

(10) Income Taxes

Virgin Media files its primary income tax return in the U.S. Our subsidiaries file income tax returns in the U.S., the U.K. and Ireland. The income taxes of Virgin Media and its subsidiaries are presented on a separate return basis for each tax-paying entity or group.

The components of our loss before income taxes are as follows:

	Year ended December 31,		
	2019	2018	2017
		in millions	
U.S.	£ 7.9	£ (14.1)	£ (23.6)
U.K.	(342.6)	(10.2)	(69.3)
Ireland	(23.6)	(20.1)	(15.5)
Total	£ (358.3)	£ (44.4)	£ (108.4)

Income tax benefit consists of:

	Current	Deferred	Total
		in millions	
Year ended December 31, 2019:			
U.K.	£ (0.9)	£ 52.7	£ 51.8
U.S. (a)	(23.1)	(7.7)	(30.8)
Total	£ (24.0)	£ 45.0	£ 21.0
Year ended December 31, 2018:			
U.S. (a)	£ —	£ 5.9	£ 5.9
U.K.	(5.3)	6.8	1.5
Total	£ (5.3)	£ 12.7	£ 7.4
Year ended December 31, 2017:			
U.K.	£ (1.9)	£ 33.8	£ 31.9
U.S. (a)	5.6	(16.0)	(10.4)
Total	£ 3.7	£ 17.8	£ 21.5

(a) Includes federal and state income taxes. Our U.S. state income taxes were not material during any of the years presented.

Income tax benefit attributable to our loss before income taxes differs from the amounts computed using the U.S. federal income tax rates of 21.0% for 2019 and 2018 and 35.0% for 2017 as a result of the following factors:

	Year ended December 31,		
	2019	2018	2017
		in millions	
Computed "expected" tax benefit	£ 75.2	£ 9.3	£ 37.9
Basis and other differences in the treatment of items associated with investments in subsidiaries (a)	(29.3)	(52.4)	(24.1)
International rate differences (b)	(9.9)	(3.6)	(21.7)
Enacted tax law and rate changes (c)	(6.1)	25.6	7.6
Non-deductible or non-taxable interest and other expenses	(3.0)	(18.4)	6.4
Change in valuation allowances	(2.7)	56.5	(3.8)
Non-deductible or non-taxable foreign currency exchange results	1.9	(5.8)	10.5
Other, net	(5.1)	(3.8)	8.7
Total income tax benefit	£ 21.0	£ 7.4	£ 21.5

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(a) These amounts reflect the net impact of differences in the treatment of income and loss items between financial reporting and tax accounting related to investments in subsidiaries and affiliates including the effects of foreign earnings.

(b) Amounts reflect statutory rates in the U.K. and Ireland, which are lower than the U.S. federal income tax rate.

(c) On December 22, 2017, the U.S. corporate income tax rate was reduced from 35.0% to 21.0% effective January 1, 2018. Substantially all of the impacts of the U.S. tax rate change on our deferred tax balances were recorded during the fourth quarter of 2017.

The components of our net deferred tax assets are as follows:

	December 31,	
	2019	2018
	in millions	
Deferred tax assets	£ 1,540.4	£ 1,453.5
Deferred tax liabilities (a)	(1.3)	—
Net deferred tax asset	£ 1,539.1	£ 1,453.5

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(a) Our deferred tax liabilities are included in other long-term liabilities on our consolidated balance sheets.

The tax effects of temporary differences that give rise to significant portions of the deferred tax assets and deferred tax liabilities are presented below:

	December 31,	
	2019	2018
	in millions	
Deferred tax assets:		
Capital and net operating loss carryforwards	£ 2,277.6	£ 2,272.4
Property and equipment, net	1,434.4	1,465.0
Other future deductible amounts	49.4	42.8
Deferred tax assets	3,761.4	3,780.2
Valuation allowance	(2,172.9)	(2,190.6)
Deferred tax assets, net of valuation allowance	1,588.5	1,589.6
Deferred tax liabilities:		
Intangible assets	(18.4)	(85.9)
Property and equipment, net	(13.5)	(15.2)
Other future taxable amounts	(17.5)	(35.0)
Deferred tax liabilities	(49.4)	(136.1)
Net deferred tax asset	£ 1,539.1	£ 1,453.5

Our deferred income tax valuation allowance decreased £17.7 million in 2019. This decrease primarily reflects the net effect of (i) foreign currency translation adjustments, (ii) the effect of enacted tax law and rate changes and (iii) the net tax expense of £2.7 million.

We had property and equipment on which future U.K. tax deductions can be claimed of £13.9 billion and £14.1 billion at December 31, 2019 and 2018, respectively. The maximum amount of these "capital allowances" that can be claimed in any one year is approximately 18% of the remaining balance, after additions, disposals and prior claims. The tax effects of the excess of these capital allowances over the related financial reporting bases are included in the 2019 and 2018 deferred tax assets related to property and equipment, net, in the above table.

The significant components of our tax loss carryforwards and related tax assets at December 31, 2019 are as follows:

Country	Capital and net operating loss carryforwards	Related tax asset	Expiration date
	in millions		
U.K.			
Amount attributable to capital losses	£ 12,102.9	£ 2,057.5	Indefinite
Amount attributable to net operating losses (a)	898.1	152.7	Indefinite
Other	791.2	67.4	Various
Total	£ 13,792.2	£ 2,277.6	

(a) This amount includes only the tax loss carryforwards generated by our U.K. subsidiaries. Our U.K. subsidiaries are within the same U.K. tax group as our ultimate parent company, Liberty Global, and its U.K. subsidiaries. U.K. tax law permits the surrendering, without cash payment, of tax losses between entities within the same tax group. During the year ended December 31, 2019, tax losses with an aggregate tax effect of £38.9 million were surrendered by Liberty Global and its U.K. subsidiaries outside of Virgin Media to our U.K. subsidiaries. These surrendered tax assets are reflected as an increase to additional paid-in capital in our consolidated statement of owners' equity.

The use of our tax loss carryforwards within each tax jurisdiction (both capital and ordinary losses) is limited. Certain tax jurisdictions limit the ability to offset taxable income of a separate company or different tax group with the tax losses associated with another separate company or group. The majority of the tax loss carryforwards shown in the above table are not expected to be realized.

We have taxable outside basis differences on certain investments in non-U.S. subsidiaries. No additional income taxes have been provided for any undistributed foreign earnings, or any additional outside basis difference inherent in these entities, as these amounts continue to be reinvested in foreign operations. Determination of the amount of any applicable deferred taxes on such outside basis difference is not practicable.

Through our subsidiaries, we maintain a significant presence in the U.K. The U.K. maintains a highly complex tax regime that differs significantly from the system of income taxation used in the U.S. We have accounted for the effect of foreign taxes based on what we believe is reasonably expected to apply to us and our subsidiaries based on tax laws currently in effect and reasonable interpretations of these laws.

The Tax Cuts and Jobs Act (the **2017 U.S. Tax Act**) was signed into U.S. law on December 22, 2017. Significant changes to the U.S. income tax regime include the imposition of taxes on a one-time deemed mandatory repatriation of earnings and profits of foreign corporations (the **Mandatory Repatriation Tax**) and a new tax on global intangible low-taxed income (the **GILTI Tax**).

The Mandatory Repatriation Tax requires that the aggregate post-1986 earnings and profits of our foreign corporations be included in our U.S. taxable income. As of December 31, 2019, we do not have a liability for the Mandatory Repatriation Tax.

The GILTI Tax will require U.S. entities that are shareholders in foreign corporations to include in their taxable income for each year beginning after December 31, 2017, their pro rata share of global intangible low-taxed income. The GILTI Tax is calculated as the excess of the net foreign corporation income over a deemed return. The GILTI Tax is reported as a period cost when it is incurred.

We and our subsidiaries file consolidated and standalone income tax returns in the U.S., the U.K. and Ireland. In the normal course of business, our income tax filings are subject to review by various taxing authorities. In connection with such reviews, disputes could arise with the taxing authorities over the interpretation or application of certain income tax rules related to our business in that tax jurisdiction. Such disputes may result in future tax and interest and penalty assessments by these taxing authorities. The ultimate resolution of tax contingencies will take place upon the earlier of (i) the settlement date with the applicable taxing authorities in either cash or agreement of income tax positions or (ii) the date when the tax authorities are statutorily prohibited from adjusting the company's tax computations.

Tax returns filed by our company or our subsidiaries for years prior to 2014 are largely no longer subject to examination by tax authorities.

The changes in our unrecognized tax benefits are summarized below:

	Year ended December 31,		
	2019	2018	2017
		in millions	
Balance at beginning of period	£ 126.6	£ 98.8	£ 17.3
Reductions for tax positions of prior years	(21.7)	—	(4.2)
Foreign currency translation	(4.0)	6.6	(2.6)
Additions for tax positions of prior years	0.1	16.2	—
Additions based on tax positions related to the current year	—	5.0	89.8
Lapse of statute of limitations	(0.3)	—	(1.5)
Balance at end of period	£ 100.7	£ 126.6	£ 98.8

No assurance can be given that any of these tax benefits will be recognized or realized.

As of December 31, 2019, 2018 and 2017 our unrecognized tax benefits included £100.7 million, £120.5 million and £2.7 million, respectively, of tax benefits that would have a favorable impact on our effective income tax rate if ultimately recognized, after considering amounts that we would expect to be offset by valuation allowances.

We do not expect any material changes to our unrecognized tax benefits during 2020. No assurance can be given as to the nature or impact of any changes in our unrecognized tax positions during 2020.

(11) Owners' Equity

Virgin Media has 111 shares of common stock outstanding.

(12) Share-based Compensation

Our share-based compensation expense represents amounts allocated to our company by Liberty Global and related employer taxes. The amounts allocated by Liberty Global to our company represent share-based compensation associated with the Liberty Global share-based incentive awards held by certain employees of our subsidiaries. Share-based compensation expense allocated to our company by Liberty Global is reflected as an increase to parent's equity and is offset by any amounts recharged to us by Liberty Global, as further described in note 13. Incentive awards are denominated in U.S. dollars.

The following table summarizes our share-based compensation expense, which is included in SG&A expense in our consolidated statements of operations:

	Year ended December 31,		
	2019	2018	2017
		in millions	
Performance-based incentive awards (a)	£ 8.6	£ 5.0	£ 4.8
Non-performance based incentive awards	34.4	17.3	16.7
Other (b)	5.3	6.4	0.5
Total	£ 48.3	£ 28.7	£ 22.0

(a) Includes share-based compensation expense related to (i) Liberty Global PSUs and (ii) the Challenge Performance Awards.

(b) Represents annual incentive compensation and defined contribution plan liabilities that have been or are expected to be settled with Liberty Global ordinary shares. In the case of the annual incentive compensation, shares have been or will be issued to senior management and key employees pursuant to a shareholding incentive program that was implemented in the fourth quarter of 2017. The shareholding incentive program allows these employees to elect to receive up to 100% of their annual incentive compensation in ordinary shares of Liberty Global in lieu of cash.

As of December 31, 2019, £69.7 million of total unrecognized compensation cost related to our Liberty Global share-based compensation awards is expected to be recognized by our company over a weighted-average period of approximately 1.7 years.

The following table summarizes incentive awards held by employees of our subsidiaries with respect to Liberty Global ordinary shares:

	Class A		Class C	
	December 31,			
	2019	2018	2019	2018
Outstanding:				
Options	48,275	59,329	1,959,224	1,352,865
SARs	4,395,016	2,770,982	9,136,930	5,882,884
RSUs	239,220	239,862	496,948	500,255
PSUs	695,680	492,246	1,391,360	985,576
Exercisable:				
Options	48,275	59,329	1,890,387	1,302,037
SARs	1,984,942	1,550,519	4,317,189	3,440,557

Share Incentive Plans — Liberty Global Ordinary Shares

Incentive Plans

As of December 31, 2019, Liberty Global was authorized to grant incentive awards under the Liberty Global 2014 Incentive Plan. Generally, the compensation committee of Liberty Global's board of directors may grant non-qualified share options, SARs, restricted shares, RSUs, cash awards, performance awards or any combination of the foregoing (collectively, awards). Ordinary shares issuable pursuant to awards made under these incentive plans will be made available from either authorized but unissued shares or shares that have been issued but reacquired by Liberty Global. Awards may be granted at or above fair value in any class of ordinary shares. The maximum number of Liberty Global shares with respect to which awards may be issued under the Liberty Global 2014 Incentive Plan is 155 million (of which no more than 50.25 million shares may consist of Class B ordinary shares), subject to anti-dilution and other adjustment provisions in the respective plan. As of December 31, 2019, the Liberty Global 2014 Incentive Plan had 71,262,640 ordinary shares available for grant.

Awards (other than performance-based awards) under the Liberty Global 2014 Incentive Plan generally (a) vest 12.5% on the six month anniversary of the grant date and then vest at a rate of 6.25% each quarter thereafter and (b) expire seven years after the grant date. RSUs vest on the date of the first annual general meeting of Liberty Global shareholders following the grant date.

Performance Awards

The following is a summary of the material terms and conditions with respect to Liberty Global's performance-based awards for certain executive officers and key employees.

Liberty Global PSUs

In March 2015, Liberty Global's compensation committee approved the grant of PSUs to executive officers and key employees (the **2015 PSUs**). The performance plan for the 2015 PSUs covered a two-year period that ended on December 31, 2016 and included a performance target based on the achievement of a specified compound annual growth rate (**CAGR**) in a consolidated operating cash flow metric (as defined in the applicable underlying agreement). The performance target was adjusted for events such as acquisitions, dispositions and changes in foreign currency exchange rates that affect comparability (**OCF CAGR**), and the participant's annual performance ratings during the two-year performance period. Participants earned 99.5% of their targeted awards under the 2015 PSUs, which vested 50% on each of April 1 and October 1 of 2017.

In February 2016, Liberty Global's compensation committee approved the grant of PSUs to executive officers and key employees (the **2016 PSUs**). The performance plan for the 2016 PSUs covered a three-year period that ended on December 31, 2018 and included a performance target based on the achievement of a specified OCF CAGR. The 2016 PSUs, as adjusted through the 2017 Award Modification, required delivery of compound annual growth rates of consolidated OCF CAGR of 6.0% during the three-year performance period for Liberty Global depending on the respective class of shares underlying the award. Participants earned 82.3% of their targeted awards under the 2016 PSUs, which vested 50% on each of April 1, 2019 and October 1, 2019.

During 2018, the compensation committee of Liberty Global's board of directors approved the grant of PSUs to executive officers and key employees (the **2018 PSUs**) pursuant to a performance plan that is based on the achievement of a specified OCF CAGR during the two-year period that ended on December 31, 2019. The 2018 PSUs include over- and under performance payout opportunities should the OCF CAGR exceed or fail to meet the target, as applicable. A performance range of 50% to 125% of the target OCF CAGR will generally result in award recipients earning 50% to 150% of their target 2018 PSUs, subject to reduction or forfeiture based on individual performance. The earned 2018 PSUs will vest 50% on each of April 1, 2020 and 50% on October 1, 2020. The target OCF CAGR for the 2018 PSUs was determined on October 26, 2018 and, accordingly, associated compensation expense has been recognized prospectively from that date.

In April 2019, the compensation committee of Liberty Global's board of directors approved the grant of PSUs to executive officers and key employees (the **2019 PSUs**) pursuant to a performance plan that is based on the achievement of a specified OCF CAGR during the two-year period ending December 31, 2020. The 2019 PSUs include over- and under-performance payout opportunities should the OCF CAGR exceed or fail to meet the target, as applicable. A performance range of 50% to 125% of the target OCF CAGR will generally result in award recipients earning 50% to 150% of their target 2019 PSUs, subject to reduction or forfeiture based on individual performance. The earned 2019 PSUs will vest 50% on April 1, 2021 and 50% on October 1, 2021.

(13) Related-party Transactions

Our related-party transactions consist of the following:

	Year ended December 31,		
	2019	2018 (a)	2017 (a)
		in millions	
Charges included in:			
Programming and other direct costs of services	£ (19.6)	£ (9.5)	£ (3.3)
Other operating	(27.7)	(21.8)	(8.6)
SG&A	(5.9)	(11.0)	(15.7)
Allocated share-based compensation expense	(44.9)	(27.1)	(20.2)
Fees and allocations, net:			
Operating and SG&A (exclusive of depreciation and share-based compensation)	(19.1)	(16.3)	(25.1)
Depreciation	(71.5)	(36.3)	(38.2)
Share-based compensation	(67.9)	(34.1)	(15.2)
Management fee	(66.9)	(23.9)	(21.5)
Total fees and allocations, net	(225.4)	(110.6)	(100.0)
Included in operating income	(323.5)	(180.0)	(147.8)
Interest expense	(1.6)	(3.0)	(1.9)
Interest income	284.6	314.1	329.9
Realized and unrealized gains (losses) on derivative instruments, net	(0.9)	1.3	(2.2)
Included in net loss	£ (41.4)	£ 132.4	£ 178.0
Property and equipment transfers in (out), net	£ (1.2)	£ 27.1	£ 57.8

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(a) During the fourth quarter of 2019, Liberty Global changed its segment presentation of certain costs related to its centrally-managed technology and innovation function as a result of internal changes with respect to the way in which its chief operating decision maker evaluates the performance of its operating segments. These costs, which were previously charged to our company and reflected within the applicable categories of our fees and allocations, net, are now allocated (the **T&I Allocation**) to our company and reflected within (i) other operating expenses and (ii) SG&A expenses in our consolidated financial statements. Amounts presented for all periods have been revised to reflect this change.

The following table provides a summary of the impact that resulted from the T&I Allocation:

	Year ended December 31,		
	2019	2018	2017
		in millions	
Increase (decrease) to charges included in:			
Other operating expenses	£ 31.6	£ 26.4	£ 21.5
SG&A expenses	20.6	19.9	19.2
Fees and allocations, net:			
Operating and SG&A	(33.3)	(16.2)	(13.6)
Management fee	(18.9)	(30.1)	(27.1)
Total impact on operating income	£ —	£ —	£ —

General. Virgin Media charges fees and allocates costs and expenses to certain other Liberty Global subsidiaries and certain Liberty Global subsidiaries outside of Virgin Media charge fees and allocate costs and expenses to Virgin Media. Depending on the nature of these related-party transactions, the amount of the charges or allocations may be based on (i) our estimated share of the underlying costs, (ii) our estimated share of the underlying costs plus a mark-up or (iii) commercially-negotiated rates. The methodology Liberty Global uses to allocate its central and administrative costs to its borrowing groups impacts the calculation of the "EBITDA" metric specified by our debt agreements (**Covenant EBITDA**). In this regard, the components of related-party fees and allocations that are deducted to arrive at our Covenant EBITDA are based on (a) the amount and nature of costs incurred by the allocating Liberty Global subsidiaries during the period, (b) the allocation methodologies in effect during the period and (c) the size of the overall pool of entities that are charged fees and allocated costs, such that changes in any of these factors would likely result in changes to the amount of related-party fees and allocations that will be deducted to arrive at our Covenant EBITDA in future periods. For example, to the extent that a Liberty Global subsidiary borrowing group was to acquire (sell) an operating entity, and assuming no change in the total costs incurred by the allocating entities, the fees charged and the costs allocated to our company would decrease (increase). Although we believe that the related-party charges and allocations described below are reasonable, no assurance can be given that the related-party costs and expenses reflected in our consolidated statements of operations are reflective of the costs that we would incur on a standalone basis. Our related-party transactions are generally cash settled unless otherwise noted below.

Programming and other direct costs of services. Amounts primarily consist of interconnect, roaming, lease and access fees and other services provided to our company by other Liberty Global subsidiaries.

Other operating expenses. Amounts consist of the net effect of (i) charges of £32.9 million, £28.0 million and £20.6 million during 2019, 2018 and 2017, respectively, for network and technology services provided to our company by other Liberty Global subsidiaries, including costs related to the T&I Allocation, and (ii) recharges of £5.2 million, £6.2 million and £12.0 million during 2019, 2018 and 2017, respectively, for network and technology services provided by our company to other Liberty Global subsidiaries.

SG&A expenses. Amounts consist of the net effect of (i) charges of £22.7 million, £26.7 million and £25.2 million during 2019, 2018 and 2017, respectively, primarily related to the T&I Allocation and other information technology-related services provided to our company by another Liberty Global subsidiary, and (ii) recharges of £16.8 million, £15.7 million and £9.5 million during 2019, 2018 and 2017, respectively, primarily related to support function staffing and other services provided by our company to another Liberty Global subsidiary.

Allocated share-based compensation expense. Amounts are allocated to our company by Liberty Global and represent share-based compensation expense associated with the Liberty Global share-based incentive awards held by certain employees of our subsidiaries. Share-based compensation expense is included in SG&A expense in our consolidated statements of operations.

Fees and allocations, net. These amounts, which are based on our company's estimated share of the applicable costs (including personnel-related and other costs associated with the services provided) incurred by Liberty Global subsidiaries, represent the aggregate net effect of charges between subsidiaries of Virgin Media and various Liberty Global subsidiaries that are outside of Virgin Media. These charges generally relate to management, finance, legal, technology and other services that support our company's operations. The categories of our fees and allocations, net, are as follows:

- *Operating and SG&A (exclusive of depreciation and share-based compensation).* The amounts included in this category, which are generally loan settled, represent our estimated share of certain centralized management, marketing, finance and other operating and SG&A expenses of Liberty Global's subsidiaries, whose activities benefit multiple operations, including operations within and outside of our company. The amounts allocated represent our estimated share of the actual costs incurred by Liberty Global's subsidiaries, without a mark-up. Amounts in this category are generally deducted to arrive at our Covenant EBITDA.

- *Depreciation.* The amounts included in this category, which are generally loan settled, represent our estimated share of depreciation of assets not owned by our company. The amounts allocated represent our estimated share of the actual costs incurred by Liberty Global's subsidiaries, without a mark-up.

- *Share-based compensation.* The amounts included in this category, which are generally loan settled, represent our estimated share of share-based compensation associated with Liberty Global employees who are not employees of our company.

The amounts allocated represent our estimated share of the actual costs incurred by Liberty Global's subsidiaries, without a mark-up.

- *Management fee.* The amounts included in this category, which are generally loan settled, represent our estimated allocable share of (i) operating and SG&A expenses related to stewardship services provided by certain Liberty Global subsidiaries and (ii) the mark-up, if any, applicable to each category of the related-party fees and allocations charged to our company.

Liberty Global charges technology-based costs to our company using a royalty-based method. During 2019, 2018 and 2017, our proportional share of the technology-based costs of £138.8 million, £65.9 million and £37.1 million, respectively, were £5.5 million, nil, and £1.4 million more than the actual amount charged under the royalty-based method, respectively. Accordingly, these excess amounts have been reflected as deemed contributions of technology-related services in our respective consolidated statements of owners' equity. Any excess of these charges over our estimated proportionate share of the underlying technology-based costs is classified as a management fee and added back to arrive at Covenant EBITDA.

Interest expense. Amounts represent interest expense on long-term related-party debt, as further described below.

Interest income. Amounts represent interest income on long-term related-party notes receivable, as further described below.

Realized and unrealized gains (losses) on derivative instruments, net. These amounts relate to related-party foreign currency forward contracts with Liberty Global Europe Financing BV (**LGE Financing**), a subsidiary of Liberty Global, which were settled during the second quarter of 2019.

Property and equipment transfers, net. These amounts, which are generally cash settled, include the net carrying values of (i) construction in progress, including certain capitalized labor, transferred to or acquired from other Liberty Global subsidiaries, (ii) customer premises equipment acquired from other Liberty Global subsidiaries, which centrally procure equipment on behalf of our company and various other Liberty Global subsidiaries, and (iii) used equipment transferred to or acquired from other Liberty Global subsidiaries outside of Virgin Media.

The following table provides details of our related-party balances:

	December 31,	
	2019	2018
	in millions	
Current receivables (a)	£ 34.8	£ 47.1
Derivative instruments (b)	—	1.6
Long-term notes receivable (c)	4,963.6	4,863.6
Total related-party assets	£ 4,998.4	£ 4,912.3
Accounts payable	£ 7.2	£ 34.9
Accrued capital expenditures (d)	7.6	15.1
Other current liabilities (e)	36.4	27.0
Long-term related-party debt (f)	56.7	112.7
Other long-term liabilities	0.7	—
Total related-party liabilities	£ 108.6	£ 189.7

(a) Amounts represent (i) accrued interest on long-term notes receivable from LG Europe 2, including £27.0 million and £27.6 million, respectively, owed to Virgin Media Finco Limited (**Virgin Media Finco**), and (ii) certain receivables from other Liberty Global subsidiaries arising in the normal course of business.

(b) The December 31, 2018 amount represents the fair value of related-party derivative instruments with LGE Financing.

(c) Amounts primarily represent:

(i) a note receivable from LG Europe 2 that is owed to Virgin Media Finco. This note matures on April 15, 2023 and bears interest at a rate of 8.50%. At each of December 31, 2019 and 2018, the principal amount outstanding under this note was £1,501.5 million. At December 31, 2017, the principal amount outstanding under this note was £2,174.6 million. The decrease during 2018 relates to £673.1 million of cash repayments. The accrued interest on this note is payable semi-annually on April 15 and October 15 and may be cash settled or, if mutually agreed, loan settled; and

(ii) a note receivable from LG Europe 2 that is owed to Virgin Media Finco. At December 31, 2019, 2018 and 2017, the principal amount outstanding under this note was £3,425.0 million, £3,324.5 million and £2,891.3 million, respectively. The increase during 2019 relates to (i) £4,797.6 million of cash advances, (ii) £4,426.6 million of cash repayments and (iii) £270.5 million of other non-cash settlements. The increase during 2018 relates to (a) £4,953.2 million of cash advances, (b) £4,377.7 million of cash repayments and (c) £142.3 million of other non-cash settlements. The increase during 2017 relates to (1) £2,975.2 million of cash advances, (2) £2,432.2 million of cash repayments and (3) £148.3 million of other non-cash settlements. Pursuant to the agreement, the maturity date is July 16, 2023, however Virgin Media Finco may agree to advance additional amounts to LG Europe 2 at any time and LG Europe 2 may, with agreement from Virgin Media Finco, repay all or part of the outstanding principal at any time prior to the maturity date. The interest rate on this note, which is subject to adjustment, was 4.763% as of December 31, 2019, and the accrued interest on this note receivable may be cash settled on the last day of each month and on the date of each full or partial repayment of the note receivable or, if mutually agreed, loan settled.

(d) Amounts represent accrued capital expenditures for property and equipment transferred to our company from other Liberty Global subsidiaries.

(e) Amounts primarily represent (i) certain payables to other Liberty Global subsidiaries arising in the normal course of business and (ii) unpaid capital charges from Liberty Global, as described below, which are settled periodically. None of these payables are interest bearing.

(f) Amounts represent:

(i) a note payable from Virgin Media Mobile Finance Limited to LG Europe 2 which matures on December 18, 2021 and bears interest at a rate of 3.930%. At December 31, 2019, 2018 and 2017, the principal amount outstanding under this note was £56.7 million, £57.2 million and £56.9 million, respectively. The decrease in 2019 relates to the net effect of (i) £19.4 million of cash repayments, (ii) £18.5 million of cash advances and (iii) £0.4 million in non-cash accrued interest to the loan balance. The increase in 2018 relates to the net effect of (a) £76.4 million of cash repayments, (b) £76.0 million of cash advances and (c) £0.7 million in non-cash accrued interest to the loan balance. The increase in 2017 relates to the net effect of (1) £44.0 million of cash borrowings, (2) £32.9 million of cash repayments and (3) the transfer of £0.1 million in non-cash accrued interest to the loan balance. Accrued interest may be, as agreed to by our company and LG Europe 2, (I) transferred to the loan balance annually on January 1 or (II) repaid on the last day of each month and on the date of principal repayments; and

(ii) a note payable from Liberty Property Holdco III to Liberty Infrastructure Real Estate Holdco Limited (**LIREH**) which matures on December 1, 2029 and bears interest at a rate of 6.240%. Accrued interest may be, as agreed to by our company and LIREH, (i) transferred to the loan balance annually on January 1 or (ii) repaid on the last day of each month and on the date of principal repayments. At December 31, 2019, 2018 and 2017, the principal amount outstanding under this note was nil, £55.5 million and nil, respectively. The increase in 2018 relates to non-cash borrowings in connection with the VM Property Transfers. The outstanding balance of this note payable was non-cash settled during the first quarter of 2019.

During 2019, 2018 and 2017, we recorded capital charges of $29.5 million (£23.0 million at the applicable rate), $10.8 million (£8.1 million at the applicable rate) and $25.8 million (£21.3 million at the applicable rate), respectively, in our consolidated statements of owners' equity in connection with the exercise of Liberty Global SARs and options and the vesting of Liberty Global RSUs and PSUs held by employees of our subsidiaries. We and Liberty Global have agreed that these capital charges will be based on the fair value of the underlying Liberty Global ordinary shares associated with share-based incentive awards that vest or are exercised during the period, subject to any reduction that is necessary to ensure that the cumulative capital charge does not exceed the cumulative amount of share-based compensation expense recorded by our company with respect to Liberty Global share-based incentive awards.

During 2019 and 2018, tax losses with an aggregate tax effect of £38.9 million and £17.4 million, respectively, were surrendered by Liberty Global and its U.K. subsidiaries outside of Virgin Media to our U.K. subsidiaries. During 2017, tax losses with an aggregate tax effect of £32.3 million were surrendered to Liberty Global and its U.K. subsidiaries outside of Virgin Media from our U.K. subsidiaries. For additional information, see note 10.

Our parent company, Virgin Media, and certain Liberty Global subsidiaries are co-guarantors of the indebtedness of certain other Liberty Global subsidiaries. We do not believe these guarantees will result in material payments in the future.

(14) Restructuring Liabilities

A summary of changes in our restructuring liabilities during 2019 is set forth in the table below:

	Employee severance and termination	Office closures	Total
		in millions	
Restructuring liability as of January 1, 2019, before effect of accounting change	£ 3.8	£ 5.3	£ 9.1
Accounting change (a)	—	(1.9)	(1.9)
Restructuring liability as of January 1, 2019, as adjusted for accounting change	3.8	3.4	7.2
Restructuring charges (b)	31.8	0.3	32.1
Cash paid	(32.6)	(2.0)	(34.6)
Restructuring liability as of December 31, 2019	£ 3.0	£ 1.7	£ 4.7
Current portion	£ 1.9	£ 1.6	£ 3.5
Noncurrent portion	1.1	0.1	1.2
Total	£ 3.0	£ 1.7	£ 4.7

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(a) Amount represents restructuring liabilities related to operating leases that have been reclassified to lease liabilities in connection with our January 1, 2019 adoption of ASU 2016-02. For additional information, see note 2.

(b) Our restructuring charges include employee severance and termination costs related to certain reorganization activities.

A summary of changes in our restructuring liabilities during 2018 is set forth in the table below:

	Employee severance and termination	Office closures	Total
		in millions	
Restructuring liability as of January 1, 2018	£ 2.2	£ 6.8	£ 9.0
Restructuring charges (a)	18.0	2.7	20.7
Cash paid	(16.4)	(4.2)	(20.6)
Restructuring liability as of December 31, 2018	£ 3.8	£ 5.3	£ 9.1
Current portion	£ 2.7	£ 2.9	£ 5.6
Noncurrent portion	1.1	2.4	3.5
Total	£ 3.8	£ 5.3	£ 9.1

(a) Our restructuring charges include employee severance and termination costs related to certain reorganization activities.

A summary of changes in our restructuring liabilities during 2017 is set forth in the table below:

	Employee severance and termination	Office closures	Total
		in millions	
Restructuring liability as of January 1, 2017	£ 6.4	£ 5.4	£ 11.8
Restructuring charges (a)	15.4	6.4	21.8
Cash paid	(19.6)	(5.0)	(24.6)
Restructuring liability as of December 31, 2017	£ 2.2	£ 6.8	£ 9.0
Current portion	£ 1.2	£ 3.0	£ 4.2
Noncurrent portion	1.0	3.8	4.8
Total	£ 2.2	£ 6.8	£ 9.0

(a) Our restructuring charges include employee severance and termination costs related to certain reorganization and integration activities.

(15) Defined Benefit Plans

We operate two defined benefit plans in the U.K. and one defined benefit plan in Ireland, all of which are funded. These defined benefit plans are closed to new participants and existing participants do not accrue any additional benefits.

The table below provides summary information on our defined benefit plans:

	December 31, 2019	December 31, 2018	December 31, 2017
	in millions		
Fair value of plan assets (a)	£ 695.5	£ 645.0	£ 684.9
Projected benefit obligation	£ 617.0	£ 563.0	£ 623.5
Net asset	£ 78.5	£ 82.0	£ 61.4

(a) The fair value of plan assets at December 31, 2019 includes £409.1 million, £85.4 million and £201.0 million, of assets that are valued based on Level 1, Level 2 and Level 3 inputs, respectively, of the fair value hierarchy (as further described in note 6). Our plan assets comprise investments in debt securities, equity securities, hedge funds, insurance contracts and certain other assets.

Our net periodic pension benefit was £5.3 million, £9.1 million and £8.0 million during 2019, 2018 and 2017, respectively. There was no related service cost component in the periods presented. During 2019, contributions to our defined benefit plans aggregated £2.5 million. Based on December 31, 2019 exchange rates and information available as of that date, we expect this amount to be £2.4 million in 2020.

(16) Accumulated Other Comprehensive Earnings

Accumulated other comprehensive earnings included on our consolidated balance sheets and statements of owners' equity reflect the aggregate impact of foreign currency translation adjustments, pension-related adjustments and other. The changes in the components of accumulated other comprehensive earnings, net of taxes, are summarized as follows:

	Foreign currency translation adjustments	Pension-related adjustments and other	Total accumulated other comprehensive earnings
		in millions	
Balance at January 1, 2017	£ 122.8	£ (36.3)	£ 86.5
Other comprehensive loss	(24.8)	4.8	(20.0)
Balance at December 31, 2017	98.0	(31.5)	66.5
Other comprehensive earnings	25.1	(2.4)	22.7
Balance at December 31, 2018	123.1	(33.9)	89.2
Other comprehensive loss	4.0	(10.0)	(6.0)
Balance at December 31, 2019	£ 127.1	£ (43.9)	£ 83.2

The components of other comprehensive earnings (loss), net of taxes, are reflected in our consolidated statements of comprehensive loss. The following table summarizes the tax effects related to each component of other comprehensive earnings (loss), net of amounts reclassified to our consolidated statements of operations:

	Pre-tax amount	Tax benefit (expense)	Net-of-tax amount
		in millions	
Year ended December 31, 2019:			
Foreign currency translation adjustments	£ 4.0	£ —	£ 4.0
Pension-related adjustments	(11.8)	1.8	(10.0)
Other comprehensive loss	£ (7.8)	£ 1.8	£ (6.0)
Year ended December 31, 2018:			
Foreign currency translation adjustments	£ 25.1	£ —	£ 25.1
Pension-related adjustments and other	(2.9)	0.5	(2.4)
Other comprehensive earnings	£ 22.2	£ 0.5	£ 22.7
Year ended December 31, 2017:			
Foreign currency translation adjustments	£ (24.8)	£ —	£ (24.8)
Pension-related adjustments and other	5.1	(0.3)	4.8
Other comprehensive loss	£ (19.7)	£ (0.3)	£ (20.0)

(17) Commitments and Contingencies

Commitments

In the normal course of business, we have entered into agreements that commit our company to make cash payments in future periods with respect to programming contracts, network and connectivity commitments, purchases of customer premises and other equipment and services and other items. The following table sets forth the pound sterling equivalents of such commitments as of December 31, 2019. The commitments included in this table do not reflect any liabilities that are included on our December 31, 2019 consolidated balance sheet.

	Payments due during:						
	2020	2021	2022	2023	2024	Thereafter	Total
				in millions			
Programming commitments (a)	£ 732.0	£ 588.7	£ 234.7	£ 10.5	£ 10.5	£ 22.6	£ 1,599.0
Network and connectivity commitments	446.9	176.7	28.0	4.8	3.6	15.5	675.5
Purchase commitments	259.4	53.7	13.0	0.9	0.1	0.1	327.2
Other commitments	16.1	1.5	0.8	—	—	—	18.4
Total	£ 1,454.4	£ 820.6	£ 276.5	£ 16.2	£ 14.2	£ 38.2	£ 2,620.1

(a) Includes £1.6 million and £0.8 million of related-party programming obligations due during 2020 and 2021, respectively.

Programming commitments consist of obligations associated with certain of our programming contracts that are enforceable and legally binding on us as we have agreed to pay minimum fees without regard to (i) the actual number of subscribers to the programming services or (ii) whether we terminate service to a portion of our subscribers or dispose of a portion of our distribution systems. Programming commitments do not include increases in future periods associated with contractual inflation or other price adjustments that are not fixed. Accordingly, the amounts reflected in the above table with respect to these contracts are significantly less than the amounts we expect to pay in these periods under these contracts. Historically, payments to programming vendors have represented a significant portion of our operating costs, and we expect this will continue to be the case in future periods. In this regard, our total programming and copyright costs aggregated £917.5 million, £877.7 million and £841.8 million during 2019, 2018 and 2017, respectively.

Network and connectivity commitments include (i) commitments associated with our mobile virtual network operator (**MVNO**) agreements and (ii) service commitments associated with the network extension program in the U.K. and Ireland (the **Network Extension**). The amounts reflected in the above table with respect to certain of our MVNO commitments represent fixed minimum amounts payable under these agreements and therefore, may be significantly less than the actual amounts we ultimately pay in these periods. In November 2019, we entered into a new five-year MVNO agreement that will replace our existing MVNO agreement in 2021.

Purchase commitments include unconditional and legally binding obligations related to (i) the purchase of customer premises and other equipment and (ii) certain service-related commitments, including call center, information technology and maintenance services.

In addition to the commitments set forth in the table above, we have significant commitments under (i) derivative instruments and (ii) defined benefit plans and similar agreements, pursuant to which we expect to make payments in future periods. For information regarding our derivative instruments, including the net cash paid or received in connection with these instruments during 2019, 2018 and 2017, see note 5. For information regarding our defined benefit plans, see note 15.

Rental expense under non-cancellable operating lease arrangements amounted to £27.3 million and £38.4 million during 2018 and 2017, respectively. It is expected that in the normal course of business, operating leases that expire generally will be renewed or replaced by similar leases.

We have established defined contribution benefit plans for our subsidiaries' employees. The aggregate expense for matching contributions under the defined contribution employee benefit plans was £26.2 million, £23.5 million and £18.6 million during 2019, 2018 and 2017, respectively.

Guarantees and Other Credit Enhancements

In the ordinary course of business, we may provide (i) indemnifications to our lenders, our vendors and certain other parties, (ii) performance and/or financial guarantees to local municipalities, our customers and vendors and (iii) guarantees as a co-guarantor with certain other Liberty Global subsidiaries related to various financing arrangements. Historically, these arrangements have not resulted in our company making any material payments and we do not believe that they will result in material payments in the future.

Legal and Regulatory Proceedings and Other Contingencies

VAT Matters. Our application of VAT with respect to certain revenue generating activities has been challenged by the U.K. tax authorities (**HMRC**). HMRC claimed that amounts charged to certain customers for payment handling services are subject to VAT, while we took the position that such charges were exempt from VAT under existing law. At the time of HMRC's initial challenge in 2009, we remitted all related VAT amounts claimed by HMRC, and continued to make such VAT payments pending a ruling on our appeal to the First Tier Tribunal. As the likelihood of loss was not considered probable and we believed that the amounts paid would be recoverable, such amounts were recorded as a receivable on our consolidated balance sheet. In January 2020, the First Tier Tribunal rejected our appeal and ruled in favor of HMRC. Accordingly, during the fourth quarter of 2019 we recorded a net provision for litigation of £41.3 million, which is included in impairment, restructuring and other operating items, net, in our consolidated statement of operations. We are currently considering whether to appeal this decision further.

On March 19, 2014, the U.K. government announced a change in legislation with respect to the charging of VAT in connection with prompt payment discounts such as those that we offer to our fixed-line telephony customers. This change, which took effect on May 1, 2014, impacted our company and some of our competitors. HMRC issued a decision in the fourth quarter of 2015 challenging our application of the prompt payment discount rules prior to the May 1, 2014 change in legislation. We appealed this decision. As part of the appeal process, we were required to make aggregate payments of £67.0 million, comprising (i) the challenged amount of £63.7 million (which we paid during the fourth quarter of 2015) and (ii) related interest of £3.3 million (which we paid during the first quarter of 2016). No provision was recorded by our company at that time as the likelihood of loss was not considered to be probable. The aggregate amount paid does not include penalties, which could be significant in the event that penalties were to be assessed. In September 2018, the court rejected our appeal and ruled in favor of HMRC. Accordingly, during the third quarter of 2018, we recorded a provision for litigation of £63.7 million and related interest expense of £3.3 million in our consolidated statement of operations. The First Tier Tribunal gave permission to appeal to the Upper Tribunal and we submitted grounds for appeal on February 22, 2019. The Upper Tribunal hearing took place in February 2020, but no decision has been received. No assurance can be given as to the ultimate outcome of this matter.

Other Regulatory Matters. Video distribution, broadband internet, fixed-line telephony, mobile and content businesses are subject to significant regulation and supervision by various regulatory bodies in the jurisdictions in which we operate, and other U.K. and European Union (**E.U.**) authorities. Adverse regulatory developments could subject our businesses to a number of risks. Regulation, including conditions imposed on us by competition or other authorities as a requirement to close acquisitions or dispositions, could limit growth, revenue and the number and types of services offered and could lead to increased operating costs and property and equipment additions. In addition, regulation may restrict our operations and subject them to further competitive pressure, including pricing restrictions, interconnect and other access obligations, and restrictions or controls on content, including content provided by third parties. Failure to comply with current or future regulation could expose our businesses to various penalties.

Effective April 1, 2017, the rateable value of our existing network and other assets in the U.K. increased significantly. This increase affects the amount we pay for network infrastructure charges as the annual amount payable to the U.K. government is calculated by applying a percentage multiplier to the rateable value of assets. This change has and will continue to significantly increase our network infrastructure charges. As compared to 2019, we expect the aggregate amount of this increase will be approximately £17 million in 2020. Beyond 2020, we expect further but declining increases to these charges through the first quarter of 2022. We continue to believe that these increases are excessive and retain the right of appeal should more favorable agreements be reached with other operators. The rateable value of our network and other assets in the U.K. remains subject to review by the U.K. government.

The U.K. Office of Communications (**Ofcom**) is the key regulatory authority for the communications sector in which we operate in the U.K. Ofcom has recently issued new regulatory requirements that, effective in February 2020, obligate us to (i) alert customers who are approaching the end of a minimum contract term to the fact that their contract period is coming to an end and to set out the best new price that we can offer them and (ii) once a year, alert customers who are out of contract to that fact and again confirm the best new price we can offer them. In both cases, we must also set out the price available to new customers for an equivalent service offering. These requirements could have a material adverse impact on our revenue and Adjusted OIBDA in 2020 and future periods. For additional information see *Business - Regulatory Matters* included in Part I of this annual report.

In late February 2020, we became aware that one of our databases did not have adequate access security protection and was accessed without permission. We immediately took remedial actions, ceased access to the database and commenced an investigation. The information in the database did not include any individual's passwords or financial details, such as credit card information, or bank account numbers. We have taken steps to inform those individuals impacted and government authorities. The database had information pertaining to approximately 900,000 individuals (including customers and non-customers), representing a number that would be less than 15% of our total customer base. We do not expect this incident to have a material adverse impact on our results of operations, cash flows or financial condition for any fiscal period and given the preliminary nature of the matter we are unable to provide a meaningful estimate of a possible range of loss, if any.

In addition to the foregoing items, we have contingent liabilities related to matters arising in the ordinary course of business including (i) legal proceedings, (ii) issues involving VAT and wage, property, withholding and other tax issues and (iii) disputes over interconnection, programming, copyright and channel carriage fees. While we generally expect that the amounts required to satisfy these contingencies will not materially differ from any estimated amounts we have accrued, no assurance can be given that the resolution of one or more of these contingencies will not result in a material impact on our results of operations, cash flows or financial position in any given period. Due, in general, to the complexity of the issues involved and, in certain cases, the lack of a clear basis for predicting outcomes, we cannot provide a meaningful range of potential losses or cash outflows that might result from any unfavorable outcomes.

(18) Segment Reporting

We have one reportable segment that provides broadband internet, video, fixed-line telephony, mobile and broadcasting services in the U.K. and Ireland.

Our revenue by major category is set forth below:

	Year ended December 31,		
	2019	2018	2017
		in millions	
Residential revenue:			
Residential cable revenue (a):			
Subscription revenue (b):			
Broadband internet	£ 1,676.4	£ 1,600.4	£ 1,489.6
Video	1,080.4	1,045.3	1,017.9
Fixed-line telephony	849.4	921.6	940.3
Total subscription revenue	3,606.2	3,567.3	3,447.8
Non-subscription revenue	59.5	71.1	94.0
Total residential cable revenue	3,665.7	3,638.4	3,541.8
Residential mobile revenue (c):			
Subscription revenue (b)	361.4	360.1	370.1
Non-subscription revenue	294.5	303.4	234.7
Total residential mobile revenue	655.9	663.5	604.8
Total residential revenue	4,321.6	4,301.9	4,146.6
B2B revenue (d):			
Subscription revenue	89.0	78.9	57.0
Non-subscription revenue	686.3	699.1	696.3
Total B2B revenue	775.3	778.0	753.3
Other revenue (e)	71.3	70.4	63.3
Total	£ 5,168.2	£ 5,150.3	£ 4,963.2

(a) Residential cable subscription revenue includes amounts received from subscribers for ongoing services and the recognition of deferred installation revenue over the associated contract period. Residential cable non-subscription revenue includes, among other items, channel carriage fees, late fees and revenue from the sale of equipment. As described in note 2, we adopted ASU 2014-09 on January 1, 2018 using the cumulative effect transition method. For periods subsequent to our adoption of ASU 2014-09, installation revenue is generally deferred and recognized over the contractual period as residential cable subscription revenue. For periods prior to the adoption of ASU 2014-09, installation revenue is included in residential cable non-subscription revenue.

(b) Residential subscription revenue from subscribers who purchase bundled services at a discounted rate is generally allocated proportionally to each service based on the standalone price for each individual service. As a result, changes in the standalone pricing of our cable and mobile products or the composition of bundles can contribute to changes in our product revenue categories from period to period.

(c) Residential mobile subscription revenue includes amounts received from subscribers from ongoing services. Residential mobile non-subscription revenue includes, among other items, interconnect revenue and revenue from sales of mobile handsets and other devices.

(d) B2B subscription revenue represents revenue from services to certain small or home office (**SOHO**) subscribers. SOHO subscribers pay a premium price to receive expanded service levels along with broadband internet, video, fixed-line telephony or mobile services that are the same or similar to the mass marketed products offered to our residential subscribers. B2B non-subscription revenue includes revenue from business broadband internet, video, fixed-line telephony, mobile and data services offered to medium to large enterprises and, on a wholesale basis, to other operators.

(e) Other revenue primarily includes broadcasting revenue in Ireland.

Geographic Segments

The revenue of our geographic segments is set forth below:

	Year ended December 31,		
	2019	2018	2017
		in millions	
U.K.	£ 4,765.5	£ 4,757.6	£ 4,598.5
Ireland	402.7	392.7	364.7
Total	£ 5,168.2	£ 5,150.3	£ 4,963.2

The long-lived assets of our geographic segments are set forth below:

	December 31,	
	2019	2018
	in millions	
U.K.	£ 11,628.1	£ 12,152.3
Ireland	564.4	600.5
Total	£ 12,192.5	£ 12,752.8

(19) Condensed Consolidating Financial Information — Senior Notes

We present the following condensed consolidating financial information as of and for the year ended December 31, 2019, as required by the applicable underlying indentures. For the condensed consolidating financial information as of and for the years ended December 31, 2018 and 2017, see our 2018 and 2017 annual reports, respectively.

As of December 31, 2019, Virgin Media Finance is the issuer of the following senior notes:

- $71.6 million (£54.0 million) principal amount of 2022 VM 4.875% Dollar Senior Notes;
- $51.5 million (£38.8 million) principal amount of 2022 VM 5.25% Dollar Senior Notes;
- £44.1 million principal amount of 2022 VM Sterling Senior Notes;
- $497.0 million (£374.7 million) principal amount of 2024 VM Dollar Senior Notes;
- €460.0 million (£389.5 million) principal amount of 2025 VM Euro Senior Notes; and
- $388.7 million (£293.1 million) principal amount of 2025 VM Dollar Senior Notes.

Our senior notes are issued by Virgin Media Finance and are guaranteed on a senior basis by Virgin Media and certain of its subsidiaries, namely Virgin Media Group LLC (**Virgin Media Group**) and Virgin Media Communications Limited (**Virgin Media Communications**). Each of Virgin Media Investment Holdings Limited (**VMIH**) and Virgin Media Investments Limited (**VMIL**) have guaranteed the senior notes on a senior subordinated basis.

	December 31, 2019							
Balance sheet	Virgin Media	Virgin Media Finance	Other guarantors	VMIH	VMIL	All other subsidiaries	Eliminations	Total
	in millions							
ASSETS								
Current assets:								
Cash and cash equivalents	£ —	£ 1.4	£ —	£ —	£ —	£ 33.1	£ —	£ 34.5
Related-party receivables	0.2	—	—	—	—	34.6	—	34.8
Other current assets:								
Third-party	2.0	—	—	82.5	—	850.0	—	934.5
Intercompany	—	33.7	—	7.4	—	13.7	(54.8)	—
Total current assets	2.2	35.1	—	89.9	—	931.4	(54.8)	1,003.8
Property and equipment, net	—	—	—	—	—	6,078.7	—	6,078.7
Goodwill	—	—	—	—	—	6,005.8	—	6,005.8
Investments in, and loans to, parent and subsidiary companies	6,258.0	7,971.0	6,240.8	15,807.8	14,695.7	(4,084.6)	(46,888.7)	—
Deferred income taxes	—	—	—	—	—	1,540.4	—	1,540.4
Related-party notes receivable	9.8	—	—	—	—	4,953.8	—	4,963.6
Other assets, net:								
Third-party	—	—	—	451.1	—	536.3	—	987.4
Intercompany	—	167.0	—	43.4	—	114.9	(325.3)	—
Total assets	£ 6,270.0	£ 8,173.1	£ 6,240.8	£ 16,392.2	£ 14,695.7	£ 16,076.7	£ (47,268.8)	£ 20,579.7
LIABILITIES AND OWNERS' EQUITY								
Current liabilities:								
Intercompany payables	£ —	£ 246.1	£ —	£ 99.8	£ —	£ 197.2	£ (543.1)	£ —
Other current liabilities:								
Third-party	0.2	23.0	—	1,982.0	—	1,504.0	—	3,509.2
Intercompany and related-party	0.1	6.6	—	47.4	—	51.8	(54.8)	51.1
Total current liabilities	0.3	275.7	—	2,129.2	—	1,753.0	(597.9)	3,560.3
Long-term debt and finance lease obligations:								
Third-party	—	1,188.0	—	140.3	—	8,792.4	—	10,120.7
Related-party	—	—	—	—	—	56.7	—	56.7
Other long-term liabilities:								
Third-party	22.5	—	—	401.5	—	187.5	—	611.5
Intercompany and related-party	—	36.4	—	281.8	—	7.8	(325.3)	0.7
Total liabilities	22.8	1,500.1	—	2,952.8	—	10,797.4	(923.2)	14,349.9
Total parent's equity	6,247.2	6,673.0	6,240.8	13,439.4	14,695.7	5,296.7	(46,345.6)	6,247.2
Noncontrolling interest	—	—	—	—	—	(17.4)	—	(17.4)
Total owners' equity	6,247.2	6,673.0	6,240.8	13,439.4	14,695.7	5,279.3	(46,345.6)	6,229.8
Total liabilities and owners' equity	£ 6,270.0	£ 8,173.1	£ 6,240.8	£ 16,392.2	£ 14,695.7	£ 16,076.7	£ (47,268.8)	£ 20,579.7

Statement of operations	Virgin Media	Virgin Media Finance	Other guarantors	VMIH	VMIL	All other subsidiaries	Eliminations	Total
	Year ended December 31, 2019							
	in millions							
Revenue	£ —	£ —	£ —	£ —	£ —	£ 5,168.2	£ —	£ 5,168.2
Operating costs and expenses (exclusive of depreciation and amortization, shown separately below):								
Programming and other direct costs of services	—	—	—	—	—	1,611.8	—	1,611.8
Other operating	—	—	—	—	—	708.1	—	708.1
SG&A	1.1	—	—	—	—	703.2	—	704.3
Related-party fees and allocations, net	—	—	—	—	—	225.4	—	225.4
Depreciation and amortization	—	—	—	—	—	1,738.2	—	1,738.2
Impairment, restructuring and other operating items, net	—	—	—	—	—	93.7	—	93.7
	1.1	—	—	—	—	5,080.4	—	5,081.5
Operating income (loss)	(1.1)	—	—	—	—	87.8	—	86.7
Non-operating income (expense):								
Interest expense:								
Third-party	—	(75.1)	—	(104.9)	—	(458.9)	—	(638.9)
Related-party and intercompany	—	(391.9)	—	(322.7)	—	(934.8)	1,647.8	(1.6)
Interest income – related-party and intercompany	0.6	99.9	0.5	101.3	—	1,730.1	(1,647.8)	284.6
Realized and unrealized gains (losses) on derivative instruments, net:								
Third-party	—	—	—	(156.3)	—	(3.2)	—	(159.5)
Related-party and intercompany	—	(202.6)	—	207.0	—	(5.3)	—	(0.9)
Foreign currency transaction gains (losses), net	8.2	161.5	—	(47.2)	—	79.7	—	202.2
Realized and unrealized losses due to changes in fair values of certain debt, net	—	—	—	(20.8)	—	—	—	(20.8)
Losses on debt modification and extinguishment, net	—	(17.8)	—	(1.0)	—	(96.7)	—	(115.5)
Other income (expense), net	—	(0.1)	—	(0.7)	—	6.2	—	5.4
	8.8	(426.1)	0.5	(345.3)	—	317.1	—	(445.0)
Earnings (loss) before income taxes	7.7	(426.1)	0.5	(345.3)	—	404.9	—	(358.3)
Income tax benefit (expense)	(30.8)	—	—	—	—	51.8	—	21.0
Earnings (loss) after income taxes	(23.1)	(426.1)	0.5	(345.3)	—	456.7	—	(337.3)
Equity in net earnings (loss) of subsidiaries	(319.3)	97.7	(328.1)	443.1	332.5	—	(225.9)	—
Net earnings (loss)	(342.4)	(328.4)	(327.6)	97.8	332.5	456.7	(225.9)	(337.3)
Net earnings attributable to noncontrolling interest	—	—	—	—	—	(5.1)	—	(5.1)
Net earnings (loss) attributable to parent	£ (342.4)	£ (328.4)	£ (327.6)	£ 97.8	£ 332.5	£ 451.6	£ (225.9)	£ (342.4)
Total comprehensive earnings (loss)	£ (348.4)	£ (326.1)	£ (325.3)	£ 100.1	£ 334.8	£ 459.0	£ (237.4)	£ (343.3)
Comprehensive earnings attributable to noncontrolling interest	—	—	—	—	—	(5.1)	—	(5.1)
Comprehensive earnings (loss) attributable to parent	£ (348.4)	£ (326.1)	£ (325.3)	£ 100.1	£ 334.8	£ 453.9	£ (237.4)	£ (348.4)

Statement of cash flows	Virgin Media	Virgin Media Finance	Other guarantors	VMIH	VMIL	All other subsidiaries	Total
	Year ended December 31, 2019						
	in millions						
Cash flows from operating activities:							
Net cash provided (used) by operating activities	£ (24.2)	£ (165.7)	£ —	£ (197.6)	£ —	£ 2,419.0	£ 2,031.5
Cash flows from investing activities:							
Capital expenditures, net	—	—	—	—	—	(428.1)	(428.1)
Advances to related parties, net	—	—	—	—	—	(371.0)	(371.0)
Other investing activities, net	—	—	—	—	—	2.2	2.2
Net cash used by investing activities	—	—	—	—	—	(796.9)	(796.9)
Cash flows from financing activities:							
Repayments and repurchases of third-party debt and finance lease obligations	—	(319.6)	—	(2,552.7)	—	(2,381.6)	(5,253.9)
Borrowings of third-party debt	—	—	—	1,577.1	—	2,551.1	4,128.2
Payment of financing costs and debt premiums	—	(16.3)	—	(5.1)	—	(99.3)	(120.7)
Net cash received (paid) related to derivative instruments	—	—	—	101.3	—	(5.1)	96.2
Net repayments of related-party debt	—	—	—	—	—	(0.9)	(0.9)
Contributions (distributions)	33.4	503.0	—	1,077.0	—	(1,613.4)	—
Other financing activities, net	—	—	—	—	—	(39.9)	(39.9)
Net cash provided (used) by financing activities	33.4	167.1	—	197.6	—	(1,589.1)	(1,191.0)
Effect of exchange rate changes on cash and cash equivalents and restricted cash	(9.3)	—	—	—	—	—	(9.3)
Net increase (decrease) in cash and cash equivalents and restricted cash	(0.1)	1.4	—	—	—	33.0	34.3
Cash and cash equivalents and restricted cash:							
Beginning of period	0.1	—	—	—	—	24.3	24.4
End of period	£ —	£ 1.4	£ —	£ —	£ —	£ 57.3	£ 58.7
Details of end of period cash and cash equivalents and restricted cash:							
Cash and cash equivalents	£ —	£ 1.4	£ —	£ —	£ —	£ 33.1	£ 34.5
Restricted cash included in other current assets and other assets, net	—	—	—	—	—	24.2	24.2
Total cash and cash equivalents and restricted cash	£ —	£ 1.4	£ —	£ —	£ —	£ 57.3	£ 58.7

(20) Condensed Consolidating Financial Information — Senior Secured Notes

We present the following condensed consolidating financial information as of and for the year ended December 31, 2019, as required by the applicable underlying indentures. For the condensed consolidating financial information as of and for the years ended December 31, 2018 and 2017, see our 2018 and 2017 annual reports, respectively.

As of December 31, 2019, Virgin Media Secured Finance is the issuer of the following senior secured notes:

- £521.3 million principal amount of 2025 VM Sterling Senior Secured Notes;
- $750.0 million (£565.5 million) principal amount of 2026 VM Dollar Senior Secured Notes;
- £525.0 million principal amount of 2027 VM 4.875% Sterling Senior Secured Notes;
- £675.0 million principal amount of 2027 VM 5.0% Sterling Senior Secured Notes;
- £360.0 million principal amount of 2029 VM 6.25% Sterling Senior Secured Notes;
- $1,425.0 million (£1,074.4 million) principal amount of 2029 VM Dollar Senior Secured Notes;
- £340.0 million principal amount of 2029 VM 5.25% Sterling Senior Secured Notes; and
- £400.0 million principal amount of 2030 VM Sterling Senior Secured Notes.

Our senior secured notes are issued by Virgin Media Secured Finance and are guaranteed on a senior basis by Virgin Media, Virgin Media Group, Virgin Media Communications,VMIH and VMIL. They also rank pari passu with and, subject to certain exceptions, share in the same guarantees and security which have been granted in favor of our VM Credit Facilities.

	December 31, 2019					
Balance sheet	**Virgin Media**	**Virgin Media Secured Finance**	**Guarantors**	**Non-Guarantors**	**Eliminations**	**Total**
	in millions					
ASSETS						
Current assets:						
Cash and cash equivalents	£ —	£ —	£ 17.0	£ 17.5	£ —	£ 34.5
Related-party receivables	0.2	—	6.5	28.1	—	34.8
Other current assets:						
Third-party	2.0	—	680.2	252.3	—	934.5
Intercompany	—	13.2	41.1	0.5	(54.8)	—
Total current assets	2.2	13.2	744.8	298.4	(54.8)	1,003.8
Property and equipment, net	—	—	5,535.7	543.0	—	6,078.7
Goodwill	—	—	5,793.8	212.0	—	6,005.8
Investments in, and loans to, parent and subsidiary companies	6,258.0	4,466.5	(2,132.2)	3,029.1	(11,621.4)	—
Deferred income taxes	—	—	1,540.4	—	—	1,540.4
Related-party notes receivable	9.8	—	—	4,953.8	—	4,963.6
Other assets, net:						
Third-party	—	—	813.6	173.8	—	987.4
Intercompany	—	114.2	210.4	0.7	(325.3)	—
Total assets	£ 6,270.0	£ 4,593.9	£ 12,506.5	£ 9,210.8	£ (12,001.5)	£ 20,579.7
LIABILITIES AND OWNERS' EQUITY						
Current liabilities:						
Intercompany payables	£ —	£ —	£ 379.9	£ 163.2	£ (543.1)	£ —
Other current liabilities:						
Third-party	0.2	69.2	3,298.8	141.0	—	3,509.2
Intercompany and related-party	0.1	0.4	96.8	8.6	(54.8)	51.1
Total current liabilities	0.3	69.6	3,775.5	312.8	(597.9)	3,560.3
Long-term debt and finance lease obligations:						
Third-party	—	4,471.8	5,374.8	274.1	—	10,120.7
Related-party	—	—	—	56.7	—	56.7
Other long-term liabilities:						
Third-party	22.5	—	562.2	26.8	—	611.5
Intercompany and related-party	—	7.1	318.9	—	(325.3)	0.7
Total liabilities	22.8	4,548.5	10,031.4	670.4	(923.2)	14,349.9
Total parent's equity	6,247.2	45.4	2,475.1	8,557.8	(11,078.3)	6,247.2
Noncontrolling interest	—	—	—	(17.4)	—	(17.4)
Total owners' equity	6,247.2	45.4	2,475.1	8,540.4	(11,078.3)	6,229.8
Total liabilities and owners' equity	£ 6,270.0	£ 4,593.9	£ 12,506.5	£ 9,210.8	£ (12,001.5)	£ 20,579.7

	Year ended December 31, 2019					
Statement of operations	Virgin Media	Virgin Media Secured Finance	Guarantors	Non-Guarantors	Eliminations	Total
	in millions					
Revenue	£ —	£ —	£ 4,543.0	£ 625.2	£ —	£ 5,168.2
Operating costs and expenses (exclusive of depreciation and amortization, shown separately below):						
Programming and other direct costs of services	—	—	1,414.8	197.0	—	1,611.8
Other operating	—	—	618.8	89.3	—	708.1
SG&A	1.1	—	608.2	95.0	—	704.3
Related-party fees and allocations, net	—	—	170.6	54.8	—	225.4
Depreciation and amortization	—	—	1,607.1	131.1	—	1,738.2
Impairment, restructuring and other operating items, net	—	—	92.3	1.4	—	93.7
	1.1	—	4,511.8	568.6	—	5,081.5
Operating income (loss)	(1.1)	—	31.2	56.6	—	86.7
Non-operating income (expense):						
Interest expense:						
Third-party	—	(275.8)	(354.7)	(8.4)	—	(638.9)
Related-party and intercompany	—	—	(1,096.0)	(553.4)	1,647.8	(1.6)
Interest income – related-party and intercompany	0.6	264.6	872.4	794.8	(1,647.8)	284.6
Realized and unrealized gains (losses) on derivative instruments, net:						
Third-party	—	—	(156.3)	(3.2)	—	(159.5)
Related-party and intercompany	—	(9.4)	3.1	5.4	—	(0.9)
Foreign currency transaction gains (losses), net	8.2	110.1	139.1	(55.2)	—	202.2
Realized and unrealized losses due to changes in fair values of certain debt, net	—	—	(20.8)	—	—	(20.8)
Losses on debt modification and extinguishment, net	—	(80.4)	(35.1)	—	—	(115.5)
Other income, net	—	—	5.2	0.2	—	5.4
	8.8	9.1	(643.1)	180.2	—	(445.0)
Earnings (loss) before income taxes	7.7	9.1	(611.9)	236.8	—	(358.3)
Income tax benefit (expense)	(30.8)	—	51.8	—	—	21.0
Earnings (loss) after income taxes	(23.1)	9.1	(560.1)	236.8	—	(337.3)
Equity in net earnings (loss) of subsidiaries	(319.3)	—	231.7	(559.3)	646.9	—
Net earnings (loss)	(342.4)	9.1	(328.4)	(322.5)	646.9	(337.3)
Net earnings attributable to noncontrolling interest	—	—	—	(5.1)	—	(5.1)
Net earnings (loss) attributable to parent	£ (342.4)	£ 9.1	£ (328.4)	£ (327.6)	£ 646.9	£ (342.4)
Total comprehensive earnings (loss)	£ (348.4)	£ 9.1	£ (326.1)	£ (320.2)	£ 642.3	£ (343.3)
Comprehensive earnings attributable to noncontrolling interest	—	—	—	(5.1)	—	(5.1)
Comprehensive earnings (loss) attributable to parent	£ (348.4)	£ 9.1	£ (326.1)	£ (325.3)	£ 642.3	£ (348.4)

	Year ended December 31, 2019				
Statement of cash flows	**Virgin Media**	**Virgin Media Secured Finance**	**Guarantors**	**Non-Guarantors**	**Total**
			in millions		
Cash flows from operating activities:					
Net cash provided (used) by operating activities	£ (24.2)	£ (170.5)	£ 1,717.4	£ 508.8	£ 2,031.5
Cash flows from investing activities:					
Capital expenditures, net	—	—	(388.5)	(39.6)	(428.1)
Advances to related parties, net	—	—	—	(371.0)	(371.0)
Other investing activities, net	—	—	2.2	—	2.2
Net cash used by investing activities	—	—	(386.3)	(410.6)	(796.9)
Cash flows from financing activities:					
Repayments and repurchases of third-party debt and finance lease obligations	—	(2,248.9)	(2,957.5)	(47.5)	(5,253.9)
Borrowings of third-party debt	—	1,874.0	2,218.4	35.8	4,128.2
Payment of financing costs and debt premiums	—	(89.3)	(29.4)	(2.0)	(120.7)
Net cash received (paid) related to derivative instruments	—	(5.1)	101.3	—	96.2
Net repayments of related-party notes	—	—	—	(0.9)	(0.9)
Contributions (distributions)	33.4	639.8	(601.8)	(71.4)	—
Other financing activities, net	—	—	(33.2)	(6.7)	(39.9)
Net cash provided (used) by financing activities	33.4	170.5	(1,302.2)	(92.7)	(1,191.0)
Effect of exchange rate changes on cash and cash equivalents and restricted cash	(9.3)	—	—	—	(9.3)
Net increase (decrease) in cash and cash equivalents and restricted cash	(0.1)	—	28.9	5.5	34.3
Cash and cash equivalents and restricted cash:					
Beginning of period	0.1	—	10.3	14.0	24.4
End of period	£ —	£ —	£ 39.2	£ 19.5	£ 58.7
Details of end of period cash and cash equivalents and restricted cash:					
Cash and cash equivalents	£ —	£ —	£ 17.0	£ 17.5	£ 34.5
Restricted cash included in other current assets and other assets, net	—	—	22.2	2.0	24.2
Total cash and cash equivalents and restricted cash	£ —	£ —	£ 39.2	£ 19.5	£ 58.7

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis, which should be read in conjunction with our consolidated financial statements, is intended to assist in providing an understanding of our results of operations and financial condition and is organized as follows:

- *Overview.* This section provides a general description of our business and recent events.
- *Results of Operations.* This section provides an analysis of our results of operations for the years ended December 31, 2019 and 2018.
- *Liquidity and Capital Resources.* This section provides an analysis of our corporate and subsidiary liquidity, consolidated statements of cash flows and contractual commitments.
- *Critical Accounting Policies, Judgments and Estimates.* This section discusses those material accounting policies that involve uncertainties and require significant judgment in their application.
- *Quantitative and Qualitative Disclosures about Market Risk*. This section provides discussion and analysis of the foreign currency, interest rate and other market risk that our company faces.

The capitalized terms used below have been defined in the notes to our consolidated financial statements. In the following text, the terms "we," "our," "our company" and "us" may refer, as the context requires, to Virgin Media or collectively to Virgin Media and its subsidiaries.

Unless otherwise indicated, convenience translations into pound sterling are calculated, and operational data is presented, as of December 31, 2019.

Included below is an analysis of our results of operations and cash flows for 2019, as compared to 2018. An analysis of our results of operations and cash flows for 2018, as compared to 2017, can be found under *Management's Discussion and Analysis of Financial Condition and Results of Operations* included in Part II of our annual report for the year ended December 31, 2018.

Overview

General

We are a subsidiary of Liberty Global that provides broadband internet, video, fixed-line telephony, mobile and broadcasting services in the U.K. and Ireland. We are one of the U.K.'s and Ireland's largest providers of residential broadband internet, video and fixed-line telephony services in terms of the number of customers. We believe our advanced, deep-fiber cable access network enables us to offer faster and higher quality broadband internet services than our digital subscriber line market participants. As a result, we provide our customers with a leading next generation broadband internet service and one of the most advanced interactive television services available in the U.K. and Irish markets.

Operations

At December 31, 2019, our network passed 15,834,300 homes and served 14,557,600 revenue generating units (**RGU**s), consisting of 5,649,200 broadband internet subscribers, 3,967,800 video subscribers and 4,940,600 fixed-line telephony subscribers. In addition, at December 31, 2019, we served 3,277,100 mobile subscribers.

Broadband internet services. Our residential broadband internet subscribers generally access the internet at various download speeds ranging up to 500 Mbps in the U.K. and up to 1.1 Gbps across three towns or cities in the U.K., depending on the tier of service selected. We determine pricing for each different tier of broadband internet service through analysis of speed, market conditions and other factors. We continue to invest in new technologies that allow us to increase the internet speeds we offer to our customers.

Video services. Our digital cable service offerings include basic and premium programming and incremental product and service offerings, such as enhanced pay-per-view programming (including digital cable-on-demand), digital cable recorders, ultra high definition (**UHD**), high definition and 3D programming and access to over-the-top content.

Fixed-line telephony services. We offer fixed-line telephony services via either voice-over-internet-protocol or "**VoIP**" technology or circuit-switched telephony.

Mobile services. We offer voice and data mobile services using third-party networks through MVNO arrangements. In addition, we generate revenue from the sale of mobile handsets.

B2B services. We provide B2B services, including voice, broadband internet, data, video, wireless and cloud services.

For additional information regarding the details of our products and services, see *Business* included in Part I of this annual report.

Strategy and Management Focus

We strive to achieve organic revenue and customer growth in our operations by developing and marketing bundled entertainment and information and communications services, and extending and upgrading the quality of our networks where appropriate. As we use the term, organic growth excludes foreign currency translation effects (**FX**) and the estimated impact of acquisitions and dispositions. While we seek to increase our customer base, we also seek to maximize the average revenue we receive from each household by increasing the penetration of our digital broadband internet, video, fixed-line telephony and mobile services with existing customers through product bundling and upselling.

During 2019, pursuant to the Network Extension, we connected approximately 505,000 additional residential and commercial premises (excluding upgrades) to our networks in the U.K. and Ireland. We expect to continue the Network Extension in 2020. Depending on a variety of factors, including the financial and operational results of the program, the Network Extension may be continued, modified or cancelled at our discretion.

The capital costs associated with the Network Extension, which include the costs to build-out the network and the purchase and installation of related customer premises equipment, are expected to decline in 2020 as compared to 2019, but still represent a large portion of our capital costs. Our assessment of the impacts of the Network Extension is subject to competitive, economic, regulatory and other factors outside of our control.

Competition and Other External Factors

We are experiencing competition from incumbent telecommunications operators, direct-to-home satellite (**DTH**) operators and/or other providers. This competition, together with macroeconomic and regulatory factors, has adversely impacted our revenue, RGUs and/or average monthly subscription revenue per average cable RGU or mobile subscriber, as applicable (**ARPU**). For additional information regarding the competition we face, see *Business - Competition* and *Regulatory Matters* included in Part I of this annual report. For additional information regarding the revenue impact of changes in the RGUs and ARPU, see *Discussion and Analysis* below.

In addition to competition, our operations are subject to macroeconomic, political and other risks that are outside of our control. For example, on June 23, 2016, the U.K. held a referendum in which U.K. citizens voted in favor of, on an advisory basis, an exit from the E.U. commonly referred to as "**Brexit**." The U.K. formally exited the E.U. on January 31, 2020, and has now entered into a transition period until December 31, 2020, during which the U.K. and the E.U. will negotiate to formalize the future U.K.-E.U. relationship with respect to a number of matters, most notably trade. Although the U.K. has ceased to be an E.U. member, during the transition period their trading relationship will remain the same, the U.K. will continue to follow the E.U.'s rules, such as accepting rulings from the European Court of Justice, and the U.K. will continue to contribute to the E.U.'s budget. Uncertainty remains as to what specific terms of separation may be agreed during the transition period. It is possible that the U.K. will fail to agree specific separation terms with the E.U. under a so-called "hard Brexit" or "no-deal Brexit" without specific agreements on trade, finance and other key elements. The foregoing has caused uncertainty as to Brexit's impact on the free movement of goods, services, people and capital between the U.K. and the E.U., customer behavior, economic conditions, interest rates, currency exchange rates and availability of capital. The effects of Brexit could adversely affect our business, results of operations and financial condition. For additional information regarding the potential impact of Brexit on our company, see *Risk Factors* included in Part I of this annual report.

For information regarding certain other regulatory developments that could adversely impact our results of operations in future periods, see *Legal and Regulatory Proceedings and Other Contingencies - Other Regulatory Matters* in note 17 to our consolidated financial statements.

Discussion and Analysis of our Results of Operations

General

Most of our revenue is subject to VAT or similar revenue-based taxes. Any increases in these taxes could have an adverse impact on our ability to maintain or increase our revenue to the extent that we are unable to pass such tax increases on to our customers. In the case of revenue-based taxes for which we are the ultimate taxpayer, we will also experience increases in our operating expenses and corresponding declines in our Segment OCF and Segment OCF margin (Segment OCF divided by revenue) to the extent of any such tax increases. As we use the term, "**Segment OCF**" is defined as operating income before depreciation and amortization, share-based compensation, related-party fees and allocations, provisions and provision releases related to significant litigation and impairment, restructuring and other operating items. Other operating items include (i) gains and losses on the disposition of long-lived assets, (ii) third-party costs directly associated with successful and unsuccessful acquisitions and dispositions, including legal, advisory and due diligence fees, as applicable, and (iii) other acquisition-related items, such as gains and losses on the settlement of contingent consideration.

We pay interconnection fees to other telephony providers when calls or text messages from our subscribers terminate on another network, and we receive similar fees from such providers when calls or text messages from their customers terminate on our networks or networks that we access through MVNO or other arrangements. The amounts we charge and incur with respect to fixed-line telephony and mobile interconnection fees are subject to regulatory oversight. To the extent that regulatory authorities introduce fixed-line or mobile termination rate changes, we would experience prospective changes and, in very limited cases, we could experience retroactive changes in our interconnect revenue and/or costs. The ultimate impact of any such changes in termination rates on our Segment OCF would be dependent on the call or text messaging patterns that are subject to the changed termination rates.

We are subject to inflationary pressures with respect to certain costs and foreign currency exchange risk with respect to costs and expenses that are denominated in currencies other than British pound sterling. Any cost increases that we are not able to pass on to our subscribers through rate increases would result in increased pressure on our operating margins. For additional information regarding our foreign currency exchange risks see *Quantitative and Qualitative Disclosures about Market Risk — Foreign Currency Risk* below.

Revenue

General. We derive our revenue primarily from residential and B2B communications services, including broadband internet, video, fixed-line telephony and mobile services.

Variances in the subscription revenue that we receive from our customers are a function of (i) changes in the number of RGUs or mobile subscribers outstanding during the period and (ii) changes in ARPU. Changes in ARPU can be attributable to (a) changes in prices, (b) changes in bundling or promotional discounts, (c) changes in the tier of services selected, (d) variances in subscriber usage patterns and (e) the overall mix of cable and mobile products during the period. In the following discussion, we discuss ARPU changes in terms of the net impact of the above factors on the ARPU that is derived from our broadband internet, video, fixed-line telephony and mobile products.

2019 compared to 2018

Revenue

Our revenue by major category is set forth below:

	Year ended December 31,		Increase (decrease)		Organic increase (decrease)
	2019	2018	£	%	%
	in millions, except percentages				
Residential revenue:					
Residential cable revenue (a):					
Subscription revenue (b):					
Broadband internet	£ 1,676.4	£ 1,600.4	£ 76.0	4.7	4.8
Video	1,080.4	1,045.3	35.1	3.4	3.4
Fixed-line telephony	849.4	921.6	(72.2)	(7.8)	(7.8)
Total subscription revenue	3,606.2	3,567.3	38.9	1.1	1.2
Non-subscription revenue	59.5	71.1	(11.6)	(16.3)	(16.4)
Total residential cable revenue	3,665.7	3,638.4	27.3	0.8	0.8
Residential mobile revenue (c):					
Subscription revenue (b)	361.4	360.1	1.3	0.4	0.4
Non-subscription revenue	294.5	303.4	(8.9)	(2.9)	(2.9)
Total residential mobile revenue	655.9	663.5	(7.6)	(1.1)	(1.1)
Total residential revenue	4,321.6	4,301.9	19.7	0.5	0.5
B2B revenue (d):					
Subscription revenue	89.0	78.9	10.1	12.8	15.0
Non-subscription revenue	686.3	699.1	(12.8)	(1.8)	(2.0)
Total B2B revenue	775.3	778.0	(2.7)	(0.3)	(0.3)
Other revenue (e)	71.3	70.4	0.9	1.3	2.5
Total	£ 5,168.2	£ 5,150.3	£ 17.9	0.3	0.4

(a) Residential cable subscription revenue includes amounts received from subscribers for ongoing services and the recognition of deferred installation revenue over the associated contract period. Residential cable non-subscription revenue includes, among other items, channel carriage fees, late fees and revenue from the sale of equipment.

(b) Residential subscription revenue from subscribers who purchase bundled services at a discounted rate is generally allocated proportionally to each service based on the standalone price for each individual service. As a result, changes in the standalone pricing of our cable and mobile products or the composition of bundles can contribute to changes in our product revenue categories from period to period.

(c) Residential mobile subscription revenue includes amounts received from subscribers for ongoing services. Residential mobile non-subscription revenue includes, among other items, interconnect revenue and revenue from sales of mobile handsets and other devices. Residential mobile interconnect revenue was £61.8 million and £58.0 million during 2019 and 2018, respectively.

(d) B2B subscription revenue represents revenue from SOHO subscribers. SOHO subscribers pay a premium price to receive expanded service levels along with broadband internet, video, fixed-line telephony or mobile services that are the same or similar to the mass marketed products offered to our residential subscribers. A portion of the increases in our B2B subscription revenue is attributable to the conversion of certain residential subscribers to SOHO subscribers. B2B non-subscription revenue includes revenue from business broadband internet, video, fixed-line telephony, mobile and data services offered to medium to large enterprises and on a wholesale basis, to other operators.

(e) Other revenue primarily includes broadcasting revenue in Ireland.

The details of the increase in our revenue during 2019, as compared to 2018, are set forth below:

	Subscription revenue	Non-subscription revenue	Total
		in millions	
Increase in residential cable subscription revenue due to change in:			
Average number of RGUs (a)	£ 31.8	£ —	£ 31.8
ARPU (b)	9.4	—	9.4
Decrease in residential cable non-subscription revenue (c)	—	(11.6)	(11.6)
Total increase (decrease) in residential cable revenue	41.2	(11.6)	29.6
Increase (decrease) in residential mobile revenue (d)	1.6	(8.8)	(7.2)
Increase (decrease) in B2B revenue (e)	10.2	(12.6)	(2.4)
Increase in other revenue (f)	—	1.7	1.7
Total organic increase (decrease)	53.0	(31.3)	21.7
Impact of FX	(2.4)	(1.4)	(3.8)
Total	£ 50.6	£ (32.7)	£ 17.9

(a) The increase in residential cable subscription revenue related to a change in the average number of RGUs is attributable to the net effect of (i) an increase in the average number of broadband internet and fixed-line telephony RGUs and (ii) a decrease in the average number of video RGUs.

(b) The increase in residential cable subscription revenue related to a change in ARPU is attributable to the net effect of (i) a net increase due to (a) higher ARPU from video and broadband internet services and (b) lower ARPU from fixed-line telephony services and (ii) an adverse change in RGU mix.

(c) The decrease in residential cable non-subscription revenue is primarily attributable to our operations in the U.K., including (i) a decrease in revenue from late fees and (ii) lower installation revenue.

(d) The increase in residential mobile subscription revenue is primarily due to an increase in the average number of mobile subscribers, partially offset by lower ARPU in the U.K. The decrease in residential mobile non-subscription revenue is primarily attributable to our operations in the U.K., including the net effect of (i) a decrease in revenue from mobile handset sales, which typically generate relatively low margins, and (ii) £5.8 million of revenue recognized during 2019 in connection with the sale of rights to future commission payments on customer handset insurance arrangements.

(e) The increase in B2B subscription revenue is primarily due to an increase in the average number of broadband internet SOHO subscribers in the U.K. The decrease in B2B non-subscription revenue is primarily attributable to our operations in the U.K., including the net effect of (i) an increase in upfront revenue recognized in association with long-term leases of a portion of our network, (ii) lower revenue from data services, (iii) a decrease in installation revenue, (iv) a decrease in revenue related to business network services and (v) lower revenue from wholesale fixed-line telephony services.

(f) The increase in other revenue is primarily due to an increase in broadcasting revenue in Ireland.

Programming and other direct costs of services

Programming and other direct costs of services include programming and copyright costs, interconnect and access costs, costs of mobile handsets and other devices and other direct costs related to our operations. Programming and copyright costs represent a significant portion of our operating costs and are subject to rise in future periods due to various factors, including (i) higher costs associated with the expansion of our digital video content, including rights associated with ancillary product offerings and rights that provide for the broadcast of live sporting events, and (ii) rate increases.

Our programming and other direct costs of services increased £37.6 million or 2.4% during 2019, as compared to 2018. On an organic basis, programming and other direct costs of services increased £38.9 million or 2.5%. This increase includes the following factors:

- An increase in programming and copyright costs of £40.7 million or 4.6% due to higher costs for certain premium and/or basic content;

- An increase in interconnect and access costs of £18.2 million or 4.8%, primarily due to (i) an increase in interconnect and roaming costs and (ii) higher costs of £3.9 million due to the impact of a credit recorded during the second quarter of 2018 in connection with a telecommunications operator's agreement to compensate communications providers, including our company, for certain contractual breaches related to network charges; and

- A decrease in mobile handset and other device costs of £12.7 million or 6.3%, primarily due to (i) lower sales volumes and (ii) a lower average cost per handset sold.

Other operating expenses

Other operating expenses include network operations, customer operations, customer care and other costs related to our operations.

Our other operating expenses increased £24.7 million or 3.6% during 2019, as compared to 2018. On an organic basis, other operating expenses increased £25.3 million or 3.7%. This increase includes the following factors:

- An increase in network infrastructure charges of £31.9 million following an increase in the rateable value of certain of our assets. For additional information, see "*Other Regulatory Issues*" in note 17 to our consolidated financial statements;

- A decrease in personnel costs of £7.6 million or 3.5%, primarily due to the net effect of (i) lower staffing levels, (ii) higher average costs per employee, (iii) lower capitalizable labor activities and (iv) a decrease in temporary personnel costs; and

- An increase in core network and information technology-related costs of £7.5 million or 9.4%, primarily due to increases in (i) information technology-related expenses and (ii) network maintenance costs.

SG&A expenses

SG&A expenses include human resources, information technology, general services, management, finance, legal, external sales and marketing costs, share-based compensation and other general expenses. We do not include share-based compensation in the following discussion and analysis of our SG&A expenses as share-based compensation is separately discussed further below.

Our SG&A expenses (exclusive of share-based compensation) increased £9.6 million or 1.5% during 2019, as compared to 2018. On an organic basis, and excluding share-based compensation, our SG&A expenses increased £10.0 million or 1.5%. This increase includes the following factors:

- An increase in personnel costs of £10.5 million or 4.0%, primarily due to the net effect of (i) higher average costs per employee, (ii) lower staffing levels and (iii) a decrease in temporary personnel costs. A portion of the higher average costs per employee is attributable to higher severance costs of £4.9 million associated with revisions to our operating model and decreases in senior management personnel; and

- A decrease in business service and certain other costs of £4.9 million or 8.1%, primarily due to lower costs of £7.0 million due to the impact of a reassessment of an accrual during 2018.

Share-based compensation expense

Our share-based compensation expense represents amounts allocated to our company by Liberty Global and related employer taxes. The amounts allocated by Liberty Global to our company represent share-based compensation associated with the Liberty Global share-based incentive awards held by certain employees of our subsidiaries. A summary of the share-based compensation expense that is included in our SG&A expense is set forth below:

	Year ended December 31,	
	2019	2018
	in millions	
Performance-based incentive awards (a)	£ 8.6	£ 5.0
Non-performance based incentive awards	34.4	17.3
Other (b)	5.3	6.4
Total	£ 48.3	£ 28.7

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(a) Includes share-based compensation expense related to (i) Liberty Global PSUs and (ii) the Challenge Performance Awards.

(b) Represents annual incentive compensation and defined contribution plan liabilities that have been or are expected to be settled with Liberty Global ordinary shares. In the case of the annual incentive compensation, shares have been or will be issued to senior management and key employees pursuant to a shareholding incentive program that was implemented in the fourth quarter of 2017. The shareholding incentive program allows these employees to elect to receive up to 100% of their annual incentive compensation in ordinary shares of Liberty Global in lieu of cash.

For additional information regarding our share-based compensation, see note 12 to our consolidated financial statements.

Related-party fees and allocations, net

We recorded related-party fees and allocations, net, related to our estimated share of the applicable costs incurred by Liberty Global's subsidiaries of £225.4 million and £110.6 million during 2019 and 2018, respectively. These charges generally relate to management, finance, legal, technology and other corporate and administrative services provided to or by our subsidiaries. For additional information, including the impact of the T&I Allocation on our related-party fees and allocations, net, see note 13 to our consolidated financial statements.

Depreciation and amortization expense

Our depreciation and amortization expense decreased £60.0 million or 3.3% during 2019, as compared to 2018. Excluding the effects of FX, depreciation and amortization expense decreased £59.3 million or 3.3%, primarily due to the net effect of (i) a decrease associated with certain assets becoming fully depreciated and (ii) an increase associated with property and equipment additions related to the installation of customer premises equipment, the expansion and upgrade of our networks and other capital initiatives.

Impairment, restructuring and other operating items, net

We recognized impairment, restructuring and other operating items, net, of £93.7 million and £101.9 million during 2019 and 2018, respectively. The 2019 amount includes (i) a net provision for litigation of £41.3 million related to a VAT matter in the U.K. recorded during the fourth quarter of 2019, (ii) impairment charges of £21.4 million, primarily related to the write-off of certain network assets, and (iii) restructuring charges of £32.1 million, primarily due to certain reorganization activities that resulted in employee severance and termination costs. The 2018 amount includes (a) a provision for litigation of £63.7 million related to a VAT matter in the U.K. recorded during the third quarter of 2018 and (b) restructuring charges of £20.7 million, primarily due to certain reorganization activities that resulted in employee severance and termination costs.

If, among other factors, (i) our enterprise value or Liberty Global's equity values were to decline or (ii) the adverse impacts of economic, competitive, regulatory or other factors were to cause our results of operations or cash flows to be worse than anticipated, we could conclude in future periods that impairment charges are required in order to reduce the carrying values of our goodwill and, to a lesser extent, other long-lived assets. Any such impairment charges could be significant.

For additional information regarding the aforementioned VAT matters in the U.K., see note 17 to our consolidated financial statements. For additional information regarding our impairments, see *Critical Accounting Policies, Judgments and Estimates — Impairment of Property and Equipment and Intangible Assets* below. For additional information regarding our restructuring charges, see note 14 to our consolidated financial statements.

Interest expense – third-party

Our third-party interest expense decreased £13.2 million or 2.0% during 2019, as compared to 2018, primarily attributable to lower average outstanding third-party debt balances and lower weighted average interest rates. For additional information regarding our outstanding third-party indebtedness, see note 8 to our consolidated financial statements.

It is possible that the interest rates on (i) any new borrowings could be higher than the current interest rates on our existing indebtedness and (ii) our variable-rate indebtedness could increase in future periods. As further discussed in note 5 to our consolidated financial statements and under *Qualitative and Quantitative Disclosures about Market Risk* below, we use derivative instruments to manage our interest rate risks.

Interest expense – related-party

Our related-party interest expense remained relatively unchanged during 2019, as compared to 2018. For additional information regarding our related-party indebtedness, see note 13 to our consolidated financial statements.

Interest income – related-party

Our related-party interest income decreased £29.5 million or 9.4% during 2019, as compared to 2018, primarily due to lower average interest rates on the intercompany notes receivable due from LG Europe 2. For additional information, see note 13 to our consolidated financial statements.

Realized and unrealized gains (losses) on derivative instruments, net

Our realized and unrealized gains or losses on derivative instruments include (i) unrealized changes in the fair values of our derivative instruments that are non-cash in nature until such time as the derivative contracts are fully or partially settled and (ii) realized gains or losses upon the full or partial settlement of the derivative contracts. The details of our realized and unrealized gains (losses) on derivative instruments, net, are as follows:

	Year ended December 31,	
	2019	2018
	in millions	
Cross-currency and interest rate derivative contracts (a)	£ (160.0)	£ 470.0
Foreign currency forward contracts:		
Third-party	0.5	—
Related-party	(0.9)	1.3
Total	£ (160.4)	£ 471.3

(a) The loss during 2019 is attributable to (i) a net loss associated with changes in the relative value of certain currencies and (ii) a net loss associated with changes in certain market interest rates. In addition, the loss during 2019 includes a net gain of £45.3 million resulting from changes in our credit risk valuation adjustments. The gain during 2018 is primarily attributable to the net effect of (a) a net gain associated with changes in the relative value of certain currencies and (b) a net loss associated with changes in certain market interest rates. In addition, the gain during 2018 includes a net loss of £31.8 million resulting from changes in our credit risk valuation adjustments.

For additional information regarding our derivative instruments, see notes 5 and 6 to our consolidated financial statements and *Quantitative and Qualitative Disclosures about Market Risk* below.

Foreign currency transaction gains (losses), net

Our foreign currency transaction gains or losses primarily result from the remeasurement of monetary assets and liabilities that are denominated in currencies other than the underlying functional currency of the applicable entity. Unrealized foreign currency transaction gains or losses are computed based on period-end exchange rates and are non-cash in nature until such time as the amounts are settled. The details of our foreign currency transaction gains (losses), net, are as follows:

	Year ended December 31,	
	2019	**2018**
	in millions	
U.S. dollar denominated debt issued by our company	£ 166.9	£ (188.2)
Intercompany payables and receivables denominated in a currency other than the entity's functional currency (a)	67.1	(169.1)
Euro-denominated debt issued by our company	(23.8)	(4.4)
Other	(8.0)	(2.3)
Total	£ 202.2	£ (364.0)

(a) Amounts primarily relate to loans between certain of our non-operating subsidiaries.

For information regarding how we manage our exposure to foreign currency risk, see *Quantitative and Qualitative Disclosures about Market Risk — Foreign Currency Risk* below.

Realized and unrealized gains (losses) due to changes in fair values of certain debt, net

Our realized and unrealized gains or losses due to changes in fair values of certain debt include unrealized gains or losses associated with changes in fair values that are non-cash in nature until such time as these gains or losses are realized through cash transactions. We recognized realized and unrealized gains (losses) due to changes in fair values of certain debt, net, of (£20.8 million) and £0.8 million during 2019 and 2018, respectively. For additional information regarding our fair value measurements, see note 6 to our consolidated financial statements.

Losses on debt modification and extinguishment, net

We recognized losses on debt modification and extinguishment, net, of £115.5 million and £28.8 million during 2019 and 2018, respectively. The loss during 2019 is attributable to (i) the payment of £96.4 million of redemption premiums and (ii) the write-off of £19.1 million of net unamortized deferred financing costs, discounts and premiums. The loss during 2018 is attributable to (a) the payment of £22.1 million of redemption premiums and (b) the write-off of £6.7 million of net unamortized deferred financing costs, discounts and premiums.

For additional information regarding our losses on debt modification and extinguishment, net, see note 8 to our consolidated financial statements.

Income tax benefit

We recognized income tax benefit of £21.0 million and £7.4 million during 2019 and 2018, respectively.

The income tax benefit during 2019 differs from the expected income tax benefit of £75.2 million (based on the U.S. federal income tax rate of 21.0%), primarily due to the negative impact of (i) certain permanent differences between the financial and tax accounting treatment of items associated with investments in subsidiaries, (ii) statutory tax rates in certain jurisdictions in which we operate that are lower than the U.S. federal income tax rate and (iii) a decrease in deferred tax assets in the U.K. due to enacted tax law rate changes.

The income tax benefit during 2018 differs from the expected income tax benefit of £9.3 million (based on the U.S. federal income tax rate of 21.0%), primarily due to the negative impact of (i) certain permanent differences between the financial and tax accounting treatment of items associated with investments in subsidiaries and (ii) non-deductible or non-taxable interest and other expenses. The net negative impact of these items was partially offset by the positive impact of (a) a decrease in valuation allowances and (b) an increase in deferred tax assets in the U.K. due to enacted tax law rate changes.

For additional information concerning our income taxes, see note 10 to our consolidated financial statements.

Net loss

During 2019 and 2018, we reported net losses of £337.3 million and £37.0 million, respectively, including (i) operating income of £86.7 million and £206.9 million, respectively, (ii) net non-operating expense of £445.0 million and £251.3 million, respectively, and (iii) income tax benefit of £21.0 million and £7.4 million, respectively.

Gains or losses associated with (i) changes in the fair values of derivative instruments and (ii) movements in foreign currency exchange rates are subject to a high degree of volatility and, as such, any gains from these sources do not represent a reliable source of income. In the absence of significant gains in the future from these sources or from other non-operating items, our ability to achieve earnings is largely dependent on our ability to increase our Segment OCF to a level that more than offsets the aggregate amount of our (a) share-based compensation expense, (b) related-party fees and allocations, (c) depreciation and amortization, (d) impairment, restructuring and other operating items, (e) interest expense, (f) other non-operating expenses and (g) income tax expenses.

Subject to the limitations included in our various debt instruments, we expect that Liberty Global will continue to cause our company to maintain our debt at current levels relative to our Covenant EBITDA. As a result, we expect that we will continue to report significant levels of interest expense for the foreseeable future. For information concerning our expectations with respect to trends that may affect certain aspects of our operating results in future periods, see the discussion under *Overview* above. For information concerning the reasons for changes in specific line items in our consolidated statements of operations, see the above discussion.

2018 compared to 2017

For information regarding the discussion and analysis of our results of operations during 2018, as compared to 2017, see *Management's Discussion and Analysis of Financial Condition and Results of Operations* included in our 2018 annual report.

Liquidity and Capital Resources

Sources and Uses of Cash

Cash and cash equivalents

At December 31, 2019, we had cash and cash equivalents of £34.5 million, all of which was held by our subsidiaries. The terms of the instruments governing the indebtedness of certain of these subsidiaries may restrict our ability to access the liquidity of these subsidiaries. In addition, our ability to access the liquidity of our subsidiaries may be limited by tax and legal considerations and other factors.

Liquidity of Virgin Media

Our sources of liquidity at the parent level include (i) our cash and cash equivalents, (ii) funding from LG Europe 2 (and ultimately from Liberty Global or other Liberty Global subsidiaries) in the form of loans or contributions, as applicable, and (iii) subject to the restrictions noted above, proceeds in the form of distributions or loans from our subsidiaries. For information regarding limitations imposed by our subsidiaries' debt instruments, see note 8 to our consolidated financial statements.

The ongoing cash needs of Virgin Media include corporate general and administrative expenses. From time to time, Virgin Media may also require cash in connection with (i) the repayment of outstanding debt and related-party obligations (including the repurchase or exchange of outstanding debt securities in the open market or privately-negotiated transactions), (ii) the satisfaction of contingent liabilities or (iii) acquisitions and other investment opportunities. No assurance can be given that funding from LG Europe 2 (and ultimately from Liberty Global or other Liberty Global subsidiaries), our subsidiaries or external sources would be available on favorable terms, or at all.

Our parent company, Virgin Media, and certain Liberty Global subsidiaries are co-guarantors of the indebtedness of certain other Liberty Global subsidiaries. We do not believe these guarantees will result in material payments in the future.

Liquidity of our subsidiaries

In addition to cash and cash equivalents, the primary sources of liquidity of our operating subsidiaries are cash provided by operations and any borrowing availability under the VM Credit Facilities. For details of the borrowing availability of the VM Credit Facilities, see note 8 to our consolidated financial statements.

The liquidity of our operating subsidiaries generally is used to fund property and equipment additions, debt service requirements and other liquidity requirements that may arise from time to time. For additional information regarding our consolidated cash flows, see the discussion under *Consolidated Statements of Cash Flows* below. Our subsidiaries may also require funding in connection with (i) the repayment of outstanding debt, (ii) acquisitions and other investment opportunities or (iii) distributions or loans to Virgin Media, Liberty Global or other Liberty Global subsidiaries. No assurance can be given that any external funding would be available to our subsidiaries on favorable terms, or at all.

Capitalization

At December 31, 2019, the outstanding principal amount of our consolidated third-party debt, together with our finance lease obligations, aggregated £12,007.1 million, including £1,868.9 million that is classified as current on our consolidated balance sheet and £8,702.7 million that is not due until 2025 or thereafter. For additional information regarding our debt and finance lease maturities, see notes 8 and 9, respectively, to our consolidated financial statements.

As further discussed under *Quantitative and Qualitative Disclosures about Market Risk* below and in note 5 to our consolidated financial statements, we use derivative instruments to mitigate foreign currency and interest rate risk associated with our debt instruments.

Our ability to service or refinance our debt and to maintain compliance with the leverage covenants in our credit agreements and indentures is dependent primarily on our ability to maintain or increase our Covenant EBITDA and to achieve adequate returns on our property and equipment additions and acquisitions. In addition, our ability to obtain additional debt financing is limited by incurrence-based leverage covenants contained in the various debt instruments of our subsidiaries. In this regard, if our Covenant EBITDA were to decline, our ability to obtain additional debt could be limited. We do not anticipate any instances of non-compliance with respect to any of our subsidiaries' debt covenants that would have a material adverse impact on our liquidity during the next 12 months.

Notwithstanding our negative working capital position at December 31, 2018, we believe that we have sufficient resources to repay or refinance the current portion of our debt and finance lease obligations and to fund our foreseeable liquidity requirements during the next 12 months. However, as our maturing debt grows in later years, we anticipate we will seek to refinance or otherwise extend our debt maturities. No assurance can be given that we will be able to complete these refinancing transactions or otherwise extend our debt maturities. In this regard, it is not possible to predict how political and economic conditions, sovereign debt concerns or any adverse regulatory developments could impact the credit markets we access and, accordingly, our future liquidity and financial position. Our ability to access debt financing on favorable terms, or at all, could be adversely impacted by (i) the financial failure of any of our counterparties, which could (a) reduce amounts available under committed credit facilities and (b) adversely impact our ability to access cash deposited with any failed financial institution and (ii) tightening of the credit markets. In addition, sustained or increased competition, particularly in combination with adverse economic or regulatory developments, could have an unfavorable impact on our cash flows and liquidity.

All of our consolidated third-party debt and finance lease obligations at December 31, 2019 have been borrowed or incurred by our subsidiaries. For additional information concerning our debt and finance lease obligations, see note 8 and 9, respectively, to our consolidated financial statements.

Consolidated Statements of Cash Flows

Consolidated Statements of Cash Flows — 2019 compared to 2018

Summary. Our consolidated statements of cash flows for 2019 and 2018 are summarized as follows:

	Year ended December 31,		
	2019	2018	Change
	in millions		
Net cash provided by operating activities	£ 2,031.5	£ 2,202.0	£ (170.5)
Net cash used by investing activities	(796.9)	(342.2)	(454.7)
Net cash used by financing activities	(1,191.0)	(1,859.9)	668.9
Effect of exchange rate changes on cash and cash equivalents and restricted cash	(9.3)	(0.7)	(8.6)
Net increase (decrease) in cash and cash equivalents and restricted cash	£ 34.3	£ (0.8)	£ 35.1

Operating Activities. The decrease in net cash provided by our operating activities is primarily attributable to decreases in cash provided (i) by our Segment OCF and related working capital items, (ii) due to higher payments for interest and (iii) due to lower receipts of related-party interest income.

Investing Activities. The increase in net cash used by our investing activities is primarily attributable to an increase in cash used of £460.2 million related to higher net advances to related parties.

The capital expenditures we report in our consolidated statements of cash flows do not include amounts that are financed under capital-related vendor financing or finance lease arrangements. Instead, these amounts are reflected as non-cash additions to our property and equipment when the underlying assets are delivered and as repayments of debt when the principal is repaid. In this discussion, we refer to (i) our capital expenditures as reported in our consolidated statements of cash flows, which exclude amounts financed under capital-related vendor financing or finance lease arrangements, and (ii) our total property and equipment additions, which include our capital expenditures on an accrual basis and amounts financed under capital-related vendor financing or finance lease arrangements.

A reconciliation of our consolidated property and equipment additions to our consolidated net capital expenditures as reported in our consolidated statements of cash flows is set forth below:

	Year ended December 31,	
	2019	2018
	in millions	
Property and equipment additions	£ 1,234.5	£ 1,488.5
Assets acquired under capital-related vendor financing arrangements	(838.6)	(1,057.2)
Assets acquired under finance leases	(5.5)	(6.8)
Changes in current liabilities related to capital expenditures, net (including related-party amounts)	37.7	7.3
Capital expenditures, net	£ 428.1	£ 431.8

The decrease in our property and equipment additions is primarily due to decreases in (i) expenditures for the purchase and installation of customer premises equipment, (ii) baseline expenditures, including network improvements and expenditures for property and facilities and information technology systems, and (iii) expenditures for new build and upgrade projects, including the Network Extension. During 2019 and 2018, our property and equipment additions represented 23.9% and 28.9% of our revenue, respectively. For additional information regarding the Network Extension, see *Overview* above.

Financing Activities. The decrease in net cash used by our financing activities is primarily attributable to the net effect of (i) a decrease in cash used of £793.4 million related to lower net repayments of third-party debt and finance lease obligations and (ii) an increase in cash used of £92.7 million due to higher payments of financing costs and debt premiums.

Consolidated Statements of Cash Flows — 2018 compared to 2017

For information regarding the consolidated statements of cash flows for 2018, as compared to 2017, see *Management's Discussion and Analysis of Financial Condition and Results of Operations* included in our annual report for the year ended December 31, 2018.

Contractual Commitments

The follow table sets forth the pound sterling equivalents of our commitments as of December 31, 2019:

	Payments due during:						
	2020	2021	2022	2023	2024	Thereafter	Total
				in millions			
Debt (excluding interest):							
Third-party	£ 1,864.1	£ 547.5	£ 191.3	£ 94.5	£ 587.8	£ 8,669.0	£ 11,954.2
Related-party	—	56.7	—	—	—	—	56.7
Finance leases (excluding interest)	4.7	4.1	6.2	3.9	0.3	33.7	52.9
Operating leases	34.2	30.1	24.6	21.1	16.9	53.8	180.7
Programming commitments (a)	732.0	588.7	234.7	10.5	10.5	22.6	1,599.0
Network and connectivity commitments	446.9	176.7	28.0	4.8	3.6	15.5	675.5
Purchase commitments	259.4	53.7	13.0	0.9	0.1	0.1	327.2
Other commitments	16.1	1.5	0.8	—	—	—	18.4
Total (b)	£ 3,357.4	£ 1,459.0	£ 498.6	£ 135.7	£ 619.2	£ 8,794.7	£ 14,864.6
Projected cash interest payments on third-party debt and finance lease obligations (c)	£ 606.7	£ 537.3	£ 517.0	£ 507.9	£ 484.7	£ 1,391.7	£ 4,045.3

(a) Includes £1.6 million and £0.8 million of related-party programming obligations due during 2020 and 2021, respectively.

(b) The commitments included in this table do not reflect any liabilities that are included on our December 31, 2019 consolidated balance sheet other than debt and lease obligations.

(c) Amounts are based on interest rates, interest payment dates, commitment fees and contractual maturities in effect as of December 31, 2019. These amounts are presented for illustrative purposes only and will likely differ from the actual cash payments required in future periods. In addition, the amounts presented do not include the impact of our interest rate derivative contracts, deferred financing costs, original issue premiums or discounts.

For information concerning our debt obligations, finance and operating lease liabilities and commitments, see notes 8, 9 and 17, respectively, to our consolidated financial statements.

In addition to the commitments set forth in the table above, we have significant commitments under (i) derivative instruments and (ii) defined benefit plans and similar agreements, pursuant to which we expect to make payments in future periods. For information regarding projected cash flows associated with these derivative instruments, see *Quantitative and Qualitative Disclosures about Market Risk — Projected Cash Flows Associated with Derivative Instruments* below. For information regarding our derivative instruments, including the net cash paid or received in connection with these instruments during 2019, 2018 and 2017, see note 5 to our consolidated financial statements. For information regarding our defined benefit plans, see note 15 to our consolidated financial statements.

Critical Accounting Policies, Judgments and Estimates

In connection with the preparation of our consolidated financial statements, we make estimates and assumptions that affect the reported amounts of assets and liabilities, revenue and expenses and related disclosure of contingent assets and liabilities. Critical accounting policies are defined as those policies that are reflective of significant judgments, estimates and uncertainties, which would potentially result in materially different results under different assumptions and conditions. We believe the following accounting policies are critical in the preparation of our consolidated financial statements because of the judgment necessary to account for these matters and the significant estimates involved, which are susceptible to change:

- Impairment of property and equipment and intangible assets (including goodwill);
- Costs associated with construction and installation activities;
- Fair value measurements; and
- Income tax accounting.

We have discussed the selection of the aforementioned critical accounting policies with the audit committee of Liberty Global's board of directors. For additional information concerning our significant accounting policies, see note 3 to our consolidated financial statements.

Impairment of Property and Equipment and Intangible Assets

Carrying Value. The aggregate carrying value of our property and equipment and intangible assets (including goodwill) that was held for use comprised 59.2% of our total assets at December 31, 2019.

When circumstances warrant, we review the carrying amounts of our property and equipment and our intangible assets (other than goodwill) to determine whether such carrying amounts continue to be recoverable. Such changes in circumstance may include (i) an expectation of a sale or disposal of a long-lived asset or asset group, (ii) adverse changes in market or competitive conditions, (iii) an adverse change in legal factors or business climate in the markets in which we operate and (iv) operating or cash flow losses. For purposes of impairment testing, long-lived assets are grouped at the lowest level for which cash flows are largely independent of other assets and liabilities, generally at or below the reporting unit level (see below). If the carrying amount of the asset or asset group is greater than the expected undiscounted cash flows to be generated by such asset or asset group, an impairment adjustment is recognized. Such adjustment is measured by the amount that the carrying value of such asset or asset group exceeds its fair value. We generally measure fair value by considering (a) sale prices for similar assets, (b) discounted estimated future cash flows using an appropriate discount rate and/or (c) estimated replacement cost. Assets to be disposed of are recorded at the lower of their carrying amount or fair value less costs to sell.

We evaluate goodwill for impairment at least annually on October 1 and whenever facts and circumstances indicate that the carrying amount of goodwill may not be recoverable. For impairment evaluations with respect to goodwill, we first make a qualitative assessment to determine if the goodwill may be impaired. If it is more-likely-than-not that a reporting unit's fair value is less than its carrying value, we then compare the fair value of the reporting unit to its respective carrying amount. Any excess of the carrying amount over the fair value would be charged to operations as an impairment loss. A reporting unit is an operating segment or one level below an operating segment (referred to as a "component"). We have identified one reporting unit to which all goodwill is assigned.

When required, considerable management judgment is necessary to estimate the fair value of reporting units and underlying long-lived and indefinite-lived assets. We typically determine fair value using an income-based approach (discounted cash flows) based on assumptions in our long-range business plans and, in some cases, a combination of an income-based approach and a market-based approach. With respect to our discounted cash flow analysis used in the income-based approach, the timing and amount of future cash flows under these business plans require estimates of, among other items, subscriber growth and retention rates, rates charged per product, expected gross margin and Segment OCF margin and expected property and equipment additions. The development of these cash flows, and the discount rate applied to the cash flows, is subject to inherent uncertainties, and actual results could vary significantly from such estimates. Our determination of the discount rate is based on a weighted average cost of capital approach, which uses a market participant's cost of equity and after-tax cost of debt and reflects the risks inherent in the cash flows. Based on the results of our 2019 qualitative assessment of our reporting unit carrying value, we determined that it was more-likely-than-not that fair value exceeded carrying value for the reporting unit.

During the three years ended December 31, 2019, we did not record any significant impairment charges with respect to our property and equipment and intangible assets (including goodwill). For additional information regarding our long-lived assets, see note 7 to our consolidated financial statements.

If, among other factors, (i) our enterprise value or Liberty Global's equity values were to decline or (ii) the adverse impacts of economic, competitive, regulatory or other factors were to cause our results of operations or cash flows to be worse than anticipated, we could conclude in future periods that impairment charges are required in order to reduce the carrying values of our goodwill and, to a lesser extent, other long-lived assets. Any such impairment charges could be significant.

Costs Associated with Construction and Installation Activities

We capitalize costs associated with the construction of new cable and mobile transmission and distribution facilities and the installation of new cable services. Installation activities that are capitalized include (i) the initial connection (or drop) from our cable system to a customer location, (ii) the replacement of a drop and (iii) the installation of equipment for additional services, such as digital cable, telephone or broadband internet service. The costs of other customer-facing activities, such as reconnecting customer locations where a drop already exists, disconnecting customer locations and repairing or maintaining drops, are expensed as incurred.

The nature and amount of labor and other costs to be capitalized with respect to construction and installation activities involves significant judgment. In addition to direct external and internal labor and materials, we also capitalize other costs directly attributable to our construction and installation activities, including dispatch costs, quality-control costs, vehicle-related costs and certain warehouse-related costs. The capitalization of these costs is based on time sheets, time studies, standard costs, call tracking systems and other verifiable means that directly link the costs incurred with the applicable capitalizable activity. We continuously monitor the appropriateness of our capitalization policies and update the policies when necessary to respond to changes in facts and circumstances, such as the development of new products and services and changes in the manner that installations or construction activities are performed.

Fair Value Measurements

GAAP provides guidance with respect to the recurring and nonrecurring fair value measurements and for a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value into three broad levels. Level 1 inputs are quoted market prices in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date. Level 2 inputs are inputs other than quoted market prices included within Level 1 that are observable for the asset or liability, either directly or indirectly. Level 3 inputs are unobservable inputs for the asset or liability.

Recurring Valuations. We perform recurring fair value measurements with respect to our derivative instruments and certain instruments that we classify as debt, each of which are carried at fair value. We use (i) cash flow valuation models to determine the fair values of our interest rate and foreign currency derivative instruments and (ii) a Black Scholes option pricing model to determine the fair values of our equity-related derivative instruments. For a detailed discussion of the inputs we use to determine the fair value of our derivative instruments, see note 6 to our consolidated financial statements. See also note 5 to our consolidated financial statements for information concerning our derivative instruments.

Changes in the fair values of our derivative instruments and certain instruments that we classify as debt have had, and we believe will continue to have, a significant and volatile impact on our results of operations. During 2019, 2018 and 2017, we recognized net gains (losses) of (£181.2 million), £472.1 million and (£552.9 million), respectively, attributable to changes in the fair values of these items.

As further described in note 6 to our consolidated financial statements, actual amounts received or paid upon the settlement of our derivative instruments may differ materially from the recorded fair values at December 31, 2019.

For information concerning the sensitivity of the fair value of certain of our more significant derivative instruments to changes in market conditions, see *Quantitative and Qualitative Disclosures About Market Risk — Sensitivity Information* below.

Nonrecurring Valuations. Our nonrecurring valuations are primarily associated with (i) the application of acquisition accounting and (ii) impairment assessments, both of which require that we make fair value determinations as of the applicable valuation date. In making these determinations, we are required to make estimates and assumptions that affect the recorded amounts, including, but not limited to, expected future cash flows, market comparables and discount rates, remaining useful lives of long-lived assets, replacement or reproduction costs of property and equipment and the amounts to be recovered in future periods from acquired net operating losses and other deferred tax assets. To assist us in making these fair value determinations, we may engage third-party valuation specialists. Our estimates in this area impact, among other items, the amount of depreciation and amortization, impairment charges and income tax expense or benefit that we report. Our estimates of fair value are based upon assumptions we believe to be reasonable, but which are inherently uncertain. All of our long-lived assets are subject to impairment assessments. For additional information, see notes 6 and 7 to our consolidated financial statements.

Income Tax Accounting

We are required to estimate the amount of tax payable or refundable for the current year and the deferred tax assets and liabilities for the future tax consequences attributable to differences between the financial statement carrying amounts and income tax basis of assets and liabilities and the expected benefits of utilizing net operating loss and tax credit carryforwards, using enacted tax rates in effect for each taxing jurisdiction in which we operate for the year in which those temporary differences are expected to be recovered or settled. This process requires our management to make assessments regarding the timing and probability of the ultimate tax impact of such items.

Net deferred tax assets are reduced by a valuation allowance if we believe it more-likely-than-not such net deferred tax assets will not be realized. Establishing or reducing a tax valuation allowance requires us to make assessments about the timing of future events, including the probability of expected future taxable income and available tax planning strategies. At December 31, 2019, the aggregate valuation allowance provided against deferred tax assets was £2,172.9 million. The actual amount of deferred income tax benefits realized in future periods will likely differ from the net deferred tax assets reflected in our December 31, 2019 consolidated balance sheet due to, among other factors, possible future changes in income tax law or interpretations thereof in the jurisdictions in which we operate and differences between estimated and actual future taxable income. Any such factors could have a material effect on our current and deferred tax positions as reported in our consolidated financial statements. A high degree of judgment is required to assess the impact of possible future outcomes on our current and deferred tax positions.

Tax laws in jurisdictions in which we have a presence are subject to varied interpretation, and many tax positions we take are subject to significant uncertainty regarding whether the position will be ultimately sustained after review by the relevant tax authority. We recognize the financial statement effects of a tax position when it is more-likely-than-not, based on technical merits, that the position will be sustained upon examination. The determination of whether the tax position meets the more-likely-than-not threshold requires a facts-based judgment using all information available. In a number of cases, we have concluded that the more-likely-than-not threshold is not met and, accordingly, the amount of tax benefit recognized in our consolidated financial statements is different than the amount taken or expected to be taken in our tax returns. As of December 31, 2019, the amount of unrecognized tax benefits for financial reporting purposes, but taken or expected to be taken in our tax returns, was £100.7 million, all of which would have a favorable impact on our effective income tax rate if ultimately recognized, after considering amounts that we would expect to be offset by valuation allowances.

We are required to continually assess our tax positions, and the results of tax examinations or changes in judgment can result in substantial changes to our unrecognized tax benefits.

QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to market risk in the normal course of our business operations due to our ongoing investing and financing activities. Market risk refers to the risk of loss arising from adverse changes in foreign currency exchange rates and interest rates. The risk of loss can be assessed from the perspective of adverse changes in fair values, cash flows and future earnings. As further described below, we have established policies, procedures and processes governing our management of market risks and the use of derivative instruments to manage our exposure to such risks.

Cash

We invest our cash in highly liquid instruments that meet high credit quality standards. At December 31, 2019, £16.4 million or 47.5%, £12.1 million or 35.1% and £6.0 million or 17.4% of our consolidated cash balances were denominated in euros, pounds sterling and U.S. dollars, respectively.

Foreign Currency Risk

We are exposed to foreign currency exchange rate risk with respect to our consolidated debt in situations where our debt is denominated in U.S. dollars and euros. Although we generally match the denomination of our and our subsidiaries' borrowings with our functional currency, market conditions or other factors may cause us to enter into borrowing arrangements that are not denominated in our functional currency (unmatched debt). In these cases, our policy is to provide for an economic hedge against foreign currency exchange rate movements by using derivative instruments to synthetically convert unmatched debt into the applicable underlying currency. At December 31, 2019, substantially all of our debt was either directly or synthetically matched to our functional currency. For additional information concerning the terms of our derivative instruments, see note 5 to our consolidated financial statements.

In addition to the exposure that results from the mismatch of our borrowings and our functional currency, we are exposed to foreign currency risk to the extent that we enter into transactions denominated in currencies other than our functional currency (non-functional currency risk), such as equipment purchases, programming contracts, notes payable and notes receivable (including intercompany amounts). Changes in exchange rates with respect to amounts recorded on our consolidated balance sheets related to these items will result in unrealized (based upon period-end exchange rates) or realized foreign currency transaction gains and losses upon settlement of the transactions. Moreover, to the extent that our revenue, costs and expenses are denominated in currencies other than our functional currency, we will experience fluctuations in our revenue, costs and expenses solely as a result of changes in foreign currency exchange rates. Generally, we will consider hedging non-functional currency risks when the risks arise from agreements with third parties that involve the future payment or receipt of cash or other monetary items to the extent that we can reasonably predict the timing and amount of such payments or receipts and the payments or receipts are not otherwise hedged. In this regard, we have entered into foreign currency forward and option contracts to hedge certain of these risks. For additional information concerning our foreign currency forward and option contracts, see note 5 to our consolidated financial statements.

The relationship between (i) the euro and the U.S. dollar and (ii) the pound sterling, which is our reporting currency, is shown below, per one pound sterling:

	As of December 31,	
	2019	**2018**
Spot rates:		
Euro	1.1811	1.1130
U.S. dollar	1.3263	1.2746

	Year ended December 31,		
	2019	**2018**	**2017**
Average rates:			
Euro	1.1406	1.1301	1.1410
U.S. dollar	1.2770	1.3353	1.2875

Inflation Risk

We are subject to inflationary pressures with respect to labor, programming and other costs. While we attempt to increase our revenue to offset increases in costs, there is no assurance that we will be able to do so. Therefore, costs could rise faster than associated revenue, thereby resulting in a negative impact on our operating results, cash flows and liquidity. The economic environment in the U.K. and Ireland is a function of government, economic, fiscal and monetary policies and various other factors beyond our control that could lead to inflation. We are unable to predict the extent that price levels might be impacted in future periods by the current state of the economies in the U.K. and Ireland.

Interest Rate Risks

We are exposed to changes in interest rates primarily as a result of our borrowing activities, which include fixed-rate and variable-rate borrowings by our subsidiaries. Our primary exposure to variable-rate debt is through our LIBOR-indexed and EURIBOR-indexed VM Credit Facilities.

In general, we enter into derivative instruments to protect against increases in the interest rates on our variable-rate debt. Accordingly, we have entered into various derivative transactions to manage exposure to increases in interest rates. We use interest rate derivative contracts to exchange, at specified intervals, the difference between fixed and variable interest rates calculated by reference to an agreed-upon notional principal amount. We also use interest rate cap agreements and swaptions to lock in a maximum interest rate if variable rates rise, but also allow our company to benefit from declines in market rates. Under our current guidelines, we use various interest rate derivative instruments to mitigate interest rate risk, generally for five years, with the later years covered primarily by swaptions. As such, the final maturity dates of our various portfolios of interest rate derivative instruments generally fall short of the respective maturities of the underlying variable-rate debt. In this regard, we use judgment to determine the appropriate composition and maturity dates of our portfolios of interest rate derivative instruments, taking into account the relative costs and benefits of different maturity profiles in light of current and expected future market conditions, liquidity issues and other factors. For additional information concerning the impacts of these interest rate derivative instruments, see note 5 to our consolidated financial statements.

In July 2017, the U.K. Financial Conduct Authority (the authority that regulates LIBOR) announced that it intends to stop compelling banks to submit rates for the calculation of LIBOR after 2021. Additionally, the European Money Markets Institute (the authority that administers EURIBOR) has announced that measures will need to be undertaken by the end of 2021 to reform EURIBOR to ensure compliance with E.U. Benchmarks Regulation. Currently, it is not possible to predict the exact transitional arrangements for calculating applicable reference rates that may be made in the U.K., the U.S., the eurozone or elsewhere given that a number of outcomes are possible, including the cessation of the publication of one or more reference rates. Our loan documents contain provisions that contemplate alternative calculations of the base rate applicable to our LIBOR-indexed and EURIBOR-indexed debt to the extent LIBOR or EURIBOR (as applicable) are not available, which alternative calculations we do not anticipate will be materially different from what would have been calculated under LIBOR or EURIBOR (as applicable). Additionally, no mandatory prepayment or redemption provisions would be triggered under our loan documents in the event that either the LIBOR rate or the EURIBOR rate is not available. It is possible, however, that any new reference rate that applies to our LIBOR-indexed or EURIBOR-indexed debt could be different than any new reference rate that applies to our LIBOR-indexed or EURIBOR-indexed derivative instruments. We anticipate managing this difference and any resulting increased variable-rate exposure through modifications to our debt and/or derivative instruments, however future market conditions may not allow immediate implementation of desired modifications and the company may incur significant associated costs.

Weighted Average Variable Interest Rate. At December 31, 2019, the outstanding principal amount of our variable-rate indebtedness aggregated £4.6 billion, and the weighted average interest rate (including margin) on such variable-rate indebtedness was approximately 3.9%, excluding the effects of interest rate derivative contracts, deferred financing costs, original issue premiums or discounts and commitment fees, all of which affect our overall cost of borrowing. Assuming no change in the amount outstanding, and without giving effect to any interest rate derivative contracts, deferred financing costs, original issue premiums or discounts and commitment fees, a hypothetical 50 basis point (0.50%) increase (decrease) in our weighted average variable interest rate would increase (decrease) our annual interest expense and cash outflows by £23.0 million. As discussed above and in note 5 to our consolidated financial statements, we use interest rate derivative contracts to manage our exposure to increases in variable interest rates. In this regard, increases in the fair value of these contracts generally would be expected to offset most of the economic impact of increases in the variable interest rates applicable to our indebtedness to the extent and during the period that principal amounts are matched with interest rate derivative contracts.

Counterparty Credit Risk

We are exposed to the risk that the counterparties to our derivative instruments and undrawn debt facilities will default on their obligations to us. We manage these credit risks through the evaluation and monitoring of the creditworthiness of, and concentration of risk with, the respective counterparties. In this regard, credit risk associated with our derivative instruments and undrawn debt facilities is spread across a relatively broad counterparty base of banks and financial institutions. Collateral is generally not posted by either party under the derivative instruments. Most of our cash currently is invested in either (i) AAA credit rated money market funds, including funds that invest in government obligations, or (ii) overnight deposits with banks having a minimum credit rating of A by Standard & Poor's or an equivalent rating by Moody's Investor Service. To date, neither the access to nor the value of our cash and cash equivalent balances have been adversely impacted by liquidity problems of financial institutions.

At December 31, 2019, our exposure to counterparty credit risk included (i) derivative assets with an aggregate fair value of £113.9 million, (ii) cash and cash equivalent and restricted cash balances of £58.7 million and (iii) aggregate undrawn debt facilities of £1,000.0 million.

We have entered into derivative instruments under master agreements with each counterparty that contain master netting arrangements that are applicable in the event of early termination by either party to such derivative instrument. The master netting arrangements are limited to the derivative instruments, and derivative-related debt instruments, governed by the relevant master agreement and are independent of similar arrangements.

Under our derivative contracts, it is generally only the non-defaulting party that has a contractual option to exercise early termination rights upon the default of the other counterparty and to set off other liabilities against sums due upon such termination. However, in an insolvency of a derivative counterparty, under the laws of certain jurisdictions, the defaulting counterparty or its insolvency representatives may be able to compel the termination of one or more derivative contracts and trigger early termination payment liabilities payable by us, reflecting any mark-to-market value of the contracts for the counterparty. Alternatively, or in addition, the insolvency laws of certain jurisdictions may require the mandatory set off of amounts due under such derivative contracts against present and future liabilities owed to us under other contracts between us and the relevant counterparty. Accordingly, it is possible that we may be subject to obligations to make payments, or may have present or future liabilities owed to us partially or fully discharged by set off as a result of such obligations, in the event of the insolvency of a derivative counterparty, even though it is the counterparty that is in default and not us. To the extent that we are required to make such payments, our ability to do so will depend on our liquidity and capital resources at the time. In an insolvency of a defaulting counterparty, we will be an unsecured creditor in respect of any amount owed to us by the defaulting counterparty, except to the extent of the value of any collateral we have obtained from that counterparty.

In addition, where a counterparty is in financial difficulty, under the laws of certain jurisdictions, the relevant regulators may be able to (i) compel the termination of one or more derivative instruments, determine the settlement amount and/or compel, without any payment, the partial or full discharge of liabilities arising from such early termination that are payable by the relevant counterparty or (ii) transfer the derivative instruments to an alternative counterparty.

While we currently have no specific concerns about the creditworthiness of any counterparty for which we have material credit risk exposures, we cannot rule out the possibility that one or more of our counterparties could fail or otherwise be unable to meet its obligations to us. Any such instance could have an adverse effect on our cash flows, results of operations, financial condition and/or liquidity.

Although we actively monitor the creditworthiness of our key vendors, the financial failure of a key vendor could disrupt our operations and have an adverse impact on our revenue and cash flows.

Sensitivity Information

Information concerning the sensitivity of the fair value of certain of our more significant derivative instruments to changes in market conditions is set forth below. The potential changes in fair value set forth below do not include any amounts associated with the remeasurement of the derivative asset or liability into the applicable functional currency. For additional information, see notes 5 and 6 to our consolidated financial statements.

Cross-currency and Interest Rate Derivative Contracts

Holding all other factors constant, at December 31, 2019, an instantaneous increase (decrease) of 10% in the value of the pound sterling relative to the U.S. dollar would have decreased (increased) the aggregate fair value of our cross-currency and interest rate derivative contracts by approximately £592 million.

Projected Cash Flows Associated with Derivative Instruments

The following table provides information regarding the projected cash flows associated with our derivative instruments. The pound sterling equivalents presented below are based on interest rate projections and exchange rates as of December 31, 2019. These amounts are presented for illustrative purposes only and will likely differ from the actual cash payments or receipts required in future periods. For additional information regarding our derivative instruments see note 5 to our consolidated financial statements. For information concerning the counterparty credit risk associated with our derivative instruments, see the discussion under *Counterparty Credit Risk* above.

	Payments (receipts) due during:						
	2020	**2021**	**2022**	**2023**	**2024**	**Thereafter**	**Total**
				in millions			
Projected derivative cash payments (receipts), net:							
Interest-related (a)	£ 52.6	£ 6.4	£ 17.8	£ 14.6	£ 6.8	£ 67.5	£ 165.7
Principal-related (b)	—	(41.9)	(46.1)	(18.0)	(38.4)	(205.6)	(350.0)
Other (c)	—	0.4	—	—	—	—	0.4
Total	£ 52.6	£ (35.1)	£ (28.3)	£ (3.4)	£ (31.6)	£ (138.1)	£ (183.9)

(a) Includes (i) the cash flows of our interest rate cap, swaption and swap contracts and (ii) the interest-related cash flows of our cross-currency and interest rate swap contracts.

(b) Includes the principal-related cash flows of our cross-currency swap contracts.

(c) Includes amounts related to our foreign currency forward contracts.