# Evaluation of the Superfast Broadband Programme

Technical Appendix 2 – Modelling of Internal Rates of Return

February 2023

Ipsos



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# **Key terms and acronyms**

The table below lists some of the most common terminology and acronyms used in this report.

Term or	Description
acronym	
FTTP	Fibre to the premises. This refers to an access network structure in which the optical fibre runs from the local exchange to the end user's premises.
FTTC	Fibre to the cabinet. This describes an access network structure in which the optical fibre extends from the local exchange to the cabinet. The street cabinet is usually located only a few hundred metres from the subscriber's premises. The remaining part of the access network from the cabinet to the customer is usually copper wire but could use another technology, such as wireless.
Implementation clawback	Subsidies returned to the public sector in the event that build costs are lower than originally contracted.
IRR	Internal rate of return identifies the discount rate that sets the present value of a cash flow to zero throughout the lifetime of a project.
Supplier	Telecommunications providers that own the infrastructure used to deliver internet services.
Take-up	Share of premises that have access to Superfast broadband that decide to subscribe to the service.
WACC	The Weighted Average Cost of Capital is a measure of the cost of capital faced by suppliers.

# **Executive Summary**

This methodological appendix provides modelling of the expected future profitability of contracts awarded to suppliers under the 2016 to 2020 UK National Broadband Scheme (known as Phase 3 of the Superfast Broadband programme). The stages of delivery of the contracts modelled within this analysis varies, with one contract formally closed, 17 where delivery is completed but the contract is not formally closed, and 12 in delivery.

#### Key evaluation question

This analysis addresses the following evaluation question as set out in the State Aid Evaluation Plan:

- Has the aid had a significant incentive effect on the aid beneficiaries?
- Was the subsidy required to deliver commercially sustainable networks?

#### **Background to the Superfast Programme**

The rationale for the Superfast Broadband programme is underpinned by an assumption that there are some areas of the UK where investments in superfast broadband infrastructure will not generate a rate of return that exceeds the supplier's cost of capital. These investments would therefore not be commercially viable. The programme seeks to provide the minimum level of subsidy that would be required to make these investments commercially viable (i.e. the subsidy that would equalise the expected returns associated with the investment and the cost of capital faced by the supplier).

The aim of the analysis is to explore whether public subsidies were needed to provide an incentive to suppliers to extend superfast networks to the areas targeted by the programme. The approach adopted in this appendix is informed by the methodology agreed in the State Aid Evaluation Plan agreed between Building Digital UK (BDUK) and the European Commission, based on the relevant State Aid Decision.<sup>1</sup> This involves comparing the expected rates of return on the investments made to the cost of capital faced by the supplier. If the returns earned by the supplier exceed their cost of capital, then this would call into question the strength of the incentive provided by subsidies and/or the degree to which the public has provided the minimum level of subsidy needed for the project to proceed.

## Key findings

- Commercial viability without subsidy (IRR1): based on projections provided by the supplier<sup>2</sup> at tendering stage, the proposed network build was expected either to generate losses or to deliver positive rates of return that were substantially lower than the cost of capital faced by the supplier.
- Commercial viability with subsidy (IRR2): for the contracts in scope, IRR2 (factoring in subsidy payments) was [redacted]. This is [redacted] the supplier's discount rate, which would suggest that these contracts would be unprofitable even with public funding. This could be explained if the network provider considered future profitability beyond the clawback period (from which all profits)

<sup>&</sup>lt;sup>1</sup> European Commission C(2016) 3208 final, SA. 40720 (2016/N) – National Broadband Scheme for the UK for 2016-2020.

<sup>&</sup>lt;sup>2</sup> The contracts in scope all belong to the same supplier. For further detail about the selection of contracts in scope, please refer to the main report.

made would be retainable by the supplier), which would have raised longer-term returns. This is consistent with what was observed in previous phases of the programme<sup>3</sup>.

- Commercial viability without subsidy (IRR3): the analysis shows that without subsidy, most contracts appear to be loss-making (with IRRs ranging between [redacted] and [redacted] with an assumption of [redacted] take-up and [redacted] take-up respectively), as the estimated IRR is significantly below the supplier's discount rate ([redacted]). Under the assumption of [redacted] take-up, aside from two contracts ([redacted]), all contracts have a [redacted] IRR3. Under the assumption of [redacted] take-up, an additional contract's IRR ([redacted]) is [redacted].
- Commercial viability with subsidy (IRR4): given that build capex and opex on average have exceeded the original expectations, and that modelled revenues have not grown proportionally, the average estimated IRR4 is [redacted] (with [redacted] take-up) or [redacted] (with [redacted] take-up). In both cases, the IRRs are [redacted] than the supplier's required discount rate.
- Costs: there are strong indications that costs have increased throughout the lifetime of the contracts. Differences between PFM-stage estimates and actual figures are considerable in the case of build capex (more than [redacted] of overspend compared to plans). According to evidence collected through other strands of the study, this might be due to a wide range of factors that have contributed to increased deployment and operation costs. All the overspend is borne by the supplier.
- **Revenue:** Revenues expected at bidding stage are higher than revenues modelled in this analysis under both take-up scenarios. This suggests that profit margins are reduced by rising costs, which are not offset by income generated from connections.

<sup>&</sup>lt;sup>3</sup> Ipsos (2020), State aid evaluation of the UK National Broadband Scheme Technical Appendix 2 – Modelling of Internal Rates of Return, page 18.

# **1** Introduction

This report provides an overview of the expected future profitability of contracts awarded during Phase 3 of the UK National Broadband Scheme (also referred to as Superfast Broadband Programme). As illustrated in the ensuing sections, the report is based on an analysis of a sample of 27 contracts.

#### 1.1 Key evaluation question

This analysis addresses the following evaluation question set out in the State Aid Evaluation Plan:

- Has the aid had a significant incentive effect on the aid beneficiaries?
- Was the subsidy required to deliver commercially sustainable networks?

#### 1.2 Approach

This analysis aims to explore whether public funding was needed to provide an incentive for network suppliers to extend broadband coverage to areas that did not have access to Superfast coverage.

The approach adopted in this appendix is informed by the methodology agreed in the State Aid Evaluation Plan agreed between Building Digital UK (BDUK) and the European Commission, as governed by the relevant State Aid Decision issued in 2016.<sup>4</sup> This involves comparing the expected rates of return on the investments made to the cost of capital faced by suppliers.

The motivation for this analysis stems from the results of classical economic theory that suggests that, in a competitive market with no transaction costs, the private sector will maximise profits by implementing projects that generate a rate of return that at least equal their cost of capital. Otherwise, projects would be deemed to be unviable. The rationale for the programme is underpinned by the assumption that there are some areas of the UK where investment in Superfast broadband infrastructure will not generate a rate of return that exceeds the cost of capital. These investments would not be commercially viable, leaving some areas at risk of being excluded from Superfast broadband coverage (producing a 'digital divide'). At the same time, the programme seeks to provide the minimum subsidy that would be required to make these investments commercially viable (i.e. the subsidy that would equalise the expected returns associated with the investment and the cost of capital faced by the supplier).

It is not feasible for the public sector, however, to perfectly observe the expected costs and revenues associated with potential investments in Superfast coverage before subsidies are awarded. Suppliers also have an incentive to seek subsidies for investments that may be commercially viable in the absence of public support to maximise profitability and minimise risk exposure. The design of the programme anticipates this risk through the implementation of an Open Market Review process designed to encourage suppliers to reveal their investment plans and to ensure that subsidies are directed towards premises that would not be covered under commercial deployment plans. The contracts are also designed to protect the public sector from the risk that the subsidy exceeds the minimum needed for the project to go forward (for example, if costs prove lower than originally expected or if revenues exceed original expectations, particularly due to higher-than-expected take-up) via a clawback mechanism.

<sup>&</sup>lt;sup>4</sup> European Commission C(2016) 3208 final, SA. 40720 (2016/N) – National Broadband Scheme for the UK for 2016-2020.

This section examines the effectiveness of these arrangements by comparing the expected rate of return on the contracts awarded (the Internal Rate of Return, or IRR) to the suppliers Weighted Average Cost of Capital (WACC). For the purposes of this analysis, we refer to the discount rate rather than the WACC because the discount rate used in the PFM at bidding stage **[redacted]** is different than its WACC, as confirmed by BDUK. **[Redacted]** (and therefore the terms WACC and discount rate may be used interchangeably). As highlighted in the State Aid Evaluation Plan, if the actual IRR earned on the investments made exceeds the WACC before the subsidy was awarded, then this would call into question the strength of the incentive effect provided by the subsidies. It should be noted that this may not hold true where there are market failures (e.g. a dominant supplier with market power may not be incentivised to implement an investment project if it earns a marginal rate of return).

## 1.3 Contract design

This section provides a brief summary of the main characteristics of the contracts awarded during Phase 3 of the Superfast programme.

#### 1.3.1 Tendering of contracts

Contracts were awarded to suppliers by Local Bodies via a competitive tendering process. BDUK is not party to these contracts; instead, it acts as the National Competency Centre and enters a grant agreement (also called Budget Transfer Agreement) with the local bodies in order to provide funding for the programme.<sup>5</sup> Local Bodies are thus able to change standard terms and conditions, however this is subject to BDUK's approval.<sup>6</sup> Under this contractual arrangement between Local Bodies and suppliers, and pursuant to the requirement set out in the 2016 State Aid Decision<sup>7</sup>, the winning supplier finances, designs, builds, owns, and operates the network and earns profits on the revenues generated by the infrastructure.<sup>8</sup> This feature of the model aims to allow private providers to leverage existing infrastructure whilst also encouraging continuous investment in the network.

The funding is provided via a gap-funding model, which seeks to prevent the network operator from bidding for more than the minimum subsidy needed to deliver the project to deliver an IRR that broadly equals the suppliers' cost of capital.<sup>9</sup> The minimum subsidy is determined by the supplier's Project Financial Model (PFM), which is submitted as part of the tendering process. This provides estimations of:

- Number of premises to receive subsidised coverage under the proposed plan (by type of technology);
- **Capital and operational costs** associated with the proposed network build, and operational costs associated with providing Superfast services to customers;

<sup>8</sup> BDUK (2016). Funding options for BDUK funded broadband infrastructure, available at:

<sup>&</sup>lt;sup>5</sup> BDUK (2020). Contracts: Superfast. An Overview of the Contract for the Superfast Programme.

<sup>&</sup>lt;sup>6</sup> BDUK (2020). Contracts: Superfast. An Overview of the Contract for the Superfast Programme.

<sup>&</sup>lt;sup>7</sup> European Commission C(2016) 3208 final, SA. 40720 (2016/N) – National Broadband Scheme for the UK for 2016-2020.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/548348/2016\_NBS\_-\_State\_Aid\_Guidance\_-\_\_Delivery\_and\_Funding\_Options.pdf (last accessed 20 October 2022).

<sup>&</sup>lt;sup>9</sup> BDUK (2016). Funding options for BDUK funded broadband infrastructure, available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/548348/2016\_NBS - State\_Aid\_Guidance - Delivery and Funding\_Options.pdf (last accessed 20 October 2022).

- The share of premises that will take up Superfast broadband over time (including customer churn);
- Prices to be charged to customers taking up different packages and/or technologies;
- Revenues earned from customers taking up Superfast services, based on the expectations of future take-up;
- The supplier's **WACC** (used as the supplier's cost of capital in this analysis).

These factors determine the expected rate of return (the IRR) that the bidder expects to earn on the proposed network build in a particular area. The difference between the IRR and the supplier's WACC would determine the maximum level of subsidy available. Subsidies are provided to the winning supplier in instalments, following the completion of contractual milestones and for qualifying costs only. Qualifying costs refer to capitalisable expenditure directly attributable to delivering the deployed services and incremental to current business.

#### 1.3.2 Clawback mechanism

The design of the tendering process described above with its gap-funding model aims to set the IRR equal to the supplier's WACC if the supplier provides an accurate assessment of the expected costs and revenues associated with the network build for a specific contract. The actual IRR earned by the supplier could vary from these estimates if:

- There is variance between the **build and operational costs** provided at PFM stage, and the actual costs incurred by the supplier during the lifetime of the contract;
- Take-up is higher or lower than expected at PFM stage, affecting revenues; or
- The **price** charged to customers is different than assumed at PFM stage, also affecting revenue.

In addition, the contract approach seeks to minimise the risk that bidders could behave strategically by overinflating build costs or underestimating expected take-up, as both these factors influence the level of public subsidy required to make the project viable. In order to control for this risk, the Phase 3 contract model incorporated two clawback mechanisms:

- Implementation clawback: if the PFM contains overly pessimistic assumptions on capital and operational costs, or if unanticipated cost savings occur during the build, implementation clawback adjusts for lower-than-expected costs at the end of the deployment period (known as 'checkpoint F', which marks contract closure).
- Take-up clawback: To further reduce the risk of overcompensating providers, contracts include a take-up clawback mechanism to recuperate funding in instances where actual revenues and profits have exceeded the supplier's expectations at PFM stage. This may occur if take-up is higher than originally anticipated in the lifetime of the contract. In such circumstances, the gap reduces, and therefore the part of the profit that exceed PFM estimates at specific take-up review points is shared with the Local Body for up to seven years after contract closure, based on specific take-up review points in the contract (these typically occur in years 2, 4, 6, and 7 after the end of the deployment phase).

#### 1.4 Methodology

This section explains the key aspects of the methodology followed for this analysis. Further details on the methodology are reported in the Annex.

#### 1.4.1 Approach to estimating take-up

Take-up represents the number of premises connected as a share of all target premises. This is obtained by using actual information on take-up (as reported by the supplier), which is then used to model future take-up. Actual data on take-up is available up to and including Q4 FY 21/22. After the last available quarter of actual data, take-up is forecast until the end of the contract period (20 years) via a generalised logistic function. The modelling relies on two distinct assumptions of [redacted] and [redacted] take-up. The assumption of **[redacted]** take-up is in line with assumptions made by the supplier at bidding stage. In addition, the assumption of [redacted] take-up is also due to the fact that, although the areas were commercially unviable when build began, there has been an influx of capital into the fibre broadband market and an increase in alt-net provision, which could potentially lead to overbuild in the areas covered by the Superfast programme in the future, thus increasing competition and reducing the market share of the supplier awarded funding. For the [redacted] take-up assumption, such level of take-up might be achieved due to a copper 'switch-off' foreseen by 2030. It is assumed that [redacted] of individuals will either not access broadband or access it through wireless (e.g. via 5G), and that the remaining [redacted] of customers will take up Superfast broadband services with the supplier awarded funding. Both these scenarios have been modelled, and the modelled curve is adjusted to ensure that its functional forms mirrors as closely as possible the actual take-up data to date.

#### 1.4.2 Approach to estimating IRR

The aim of this analysis is to compare an updated estimate of IRRs earned by suppliers against their WACC. This involves two key challenges:

- Data: suppliers have a contractual obligation to provide Local Bodies with information on the actual costs of the network build and the share of premises passed and connected. However, suppliers are not required to provide information on on-going operational costs or revenues earned (i.e. pricing), and thus these cannot be observed directly.
- Time horizons: the IRR associated with the network build is determined over a long time period (20 years), which requires certain assumptions over future patterns of delivery and take-up, even if the deployment phase has been completed.

In light of this, a modelling exercise was conducted to project future costs and revenues, and subsequently the IRR over the contract period. This meant that actual data (up to Q4 21/22) was used to estimate future trends, replicating as closely as possible the assumptions made by the supplier at bidding stage. In certain cases (e.g. lack of actual data, delays to deployment), additional assumptions were made to obtain an estimate of future cash flows. The expected future cash flows were then used to determine the IRR.

#### 1.4.3 IRR calculation

The IRR is the discount rate that makes the net present value (NPV) of a project zero, depicted by the equation below. The value of r (where c is a stream of net cash flows over t time periods):

$$NPV = \sum_{t=1}^{T} \frac{C_t}{(1+r)^t} = 0$$

The net cash flow in each period from the point of view of the network provider is equal to:

$$C_t = (S_t - CB_t) + R_t - (BC_t + O_t)$$

Here,  $(S_t - CB_t)$  represents the net subsidy received in period t (i.e. the subsidy less clawback returned to the public sector).  $R_t$  is the revenue earned in period t.  $(BC_t + O_t)$  represents the costs incurred by the network provider in terms of build costs  $(BC_t)$  and operational costs  $(O_t)$ . The IRR is sensitive to the overall time frame of the investment and the timing of expenses and revenues. In BDUK's PFM template the IRR is obtained by using the IRR function in Excel. For the purpose of this analysis, five types of IRR have been considered for each contract (in line with the State Aid Evaluation Plan) and are defined in the following table. Further details on the calculation of IRR, as well as of other items, are available in the Annex.

#### Table 1.1: IRR definition

IRR	Description	Overview	Data sources used
IRR1	The original IRR before state aid (baseline).	Estimated by the supplier at the time of bid based on expected build costs, operational costs and revenues. This provides the suppliers estimated return on the investment, without subsidy, at the tendering stage.	Expected cash flows are provided in the PFM developed by the supplier.
IRR2	The <b>original IRR after state aid</b> (estimated by the supplier at the time of bid).	Estimated by the supplier at the time of bid based on expected build costs, operational costs, revenues and the proposed subsidy. This provides the suppliers estimated return on the investment, with subsidy, at tendering stage. The IRR2 would be expected to align approximately with the supplier's WACC, because the supplier should receive the minimum level of subsidy needed to make the project viable.	Expected cash flows with subsidy payments are provided in the PFM developed by the supplier.
IRR3	The updated estimate of IRR before state aid (modelling exercise based on latest available data and/or evidence- based assumptions).	The estimated rate of return on the project based on actual (or forecast) build costs, operational costs (based on actual and projected take-up), and revenues (modelled based on actual and expected future take-up). Net subsidy payments are set to zero. This gives an estimate of the actual rate of return on the investment, had the project been implemented without a subsidy. It should therefore show that the project would have been unviable in the absence of state intervention.	Information on actual build costs is provided in Finance Trackers. Information on actual take-up is taken from WSS/C3 reports provided by the supplier to Local Bodies. Take- up is projected based on actual trends to provide a future projection for the remainder of the project. The prediction is made by using a sigma function to approximate for the actual connection pattern. The upper limit takes a value of <b>[redacted]</b> <sup>10</sup> or <b>[redacted]</b> in turn (see Section 1.4.1 for rationale behind assumptions). Estimates of revenues and operational costs are derived by applying assumptions set out in the PFM with respect to average revenues and operational costs per customer.
IRR4	The updated <b>estimate of IRR after</b> <b>state-aid and before clawback</b> (modelling exercise based on latest available data and/or evidence-based assumptions).	This provides the estimated return on investment based on actual build costs, revenues, and operational costs (as above), and after subsidy payments paid by BDUK but before clawback is returned to the public sector.	Information on actual subsidy payments was derived from the Finance Tracker reports provided by suppliers to the Local Bodies. Where deployment was ongoing, assumptions were made about the payment of future instalments.
IRR5	The updated estimate of IRR after state-aid and after clawback (modelling exercise based on latest available data and/or evidence-based assumptions).	This provides the estimated return on investment based on actual build costs, revenues, and operational costs, and after subsidy payments, and after clawback is applied (if needed).	As for IRR4, the IRR5 is calculated based on information on forecast implementation and take-up clawback. The working assumption for take-up review

	points, as agreed	with BDUK, is 2, 4, and 6 years after
	the end of the dep	loyment period.

<sup>10</sup> In contracts where actual take-up exceeds **[redacted]**, the upper limit is equivalent to the take-up level in the last quarter of available data, rounded to the next integer.

#### 1.5 Data sources

The following sources of information have been used to develop the analysis:

- Project Financial Models (PFMs): suppliers were required to submit a PFM with their bid for contracts. As highlighted above, PFMs provide suppliers' expectations at the point of tendering<sup>11</sup> in relation to:
  - how many premises will be passed and when under the proposed scheme;
  - the costs associated with delivery broken down by type;
  - the level of expected take-up;
  - revenue forecasts;
  - on-going operational costs;
  - inflation assumptions.
- Finance Trackers: details on the actual costs incurred during build and amounts financed by the local body are summarised by suppliers in Finance Trackers, submitted to local bodies and shared with BDUK.
- WSS/C3 reports: the actual cumulative number of connected premises per quarter is reported in the WSS section of the C3 report, along with the total number of premises to be passed.
- Contract Summary Reports: this file contains information on the completion date (or forecast completion date) of all Superfast contracts.

Inflation has been recognised as a risk to the supplier's rate of return however these effects are not yet acknowledged by the programme and are not therefore incorporated into the analysis. It is not anticipated that public subsidy to the supplier will increase as a result of rising costs as there are limitations as to what suppliers can claim for. As a result, overspend on contracts is burdened by the supplier. There is some anecdotal evidence reported to BDUK that **[redacted]** have employed various strategies to offset these costs themselves.

#### **1.6 Limitations**

The modelling exercise seeks to compare the original assumptions formulated by the supplier in the PFM with actual information and forecasts to predict future cashflows. However, the modelling exercise also relies on a number of assumptions (detailed in the subsequent sections), which are needed in order to complement the monitoring information held by BDUK.

The analysis concerns a sample of 27 contracts (**[redacted]**), out of 67 Phase 3 contracts delivered by various suppliers. Overall, 29 contracts were contracts for which roll-out had started by the time the analysis was carried out, and copies of PFMs, Finance Trackers, and WSS/C3 reports were all held by

<sup>&</sup>lt;sup>11</sup> PFMs can be updated at subsequent checkpoint 'E' (i.e. change requests) if applicable.

BDUK. In addition, two contracts were excluded because actual data from Finance Trackers was deemed insufficient for the analysis due to the contracts being in the very early stages of delivery. For the WSS/C3 reports, the analysis considers the latest available report for all contracts (in general up to Q4 21/22). Therefore, the contracts in scope are not necessarily representative of all contracts awarded; contracts were deemed in scope after an initial scoping exercise that identified the sample of 27 contracts for which all the information necessary to the analysis was available (see section 1.5).

In addition to considerations around data availability, it should be noted that there are known delays to deployment of the contracts under Phase 3. Reasons for the delays mentioned during the course of interviews with suppliers and BDUK included the following:

- Supply chain delays;
- Labour shortages, caused by increasing competition from market entrants and limited supply of qualified staff;
- Difficulties in the build;
- Wayleave issues;
- Value-for-money challenges;
- Project management challenges and planning amendments proposed by suppliers.

This means that the deployment timeline of some contracts might have changed compared to expectations at PFM stage. Based on the expected end of deployment date contained in the Status Report<sup>12</sup>, it appears that closed contracts are delayed on average by slightly more than five quarters. This information has been used to model future capex. In order to correct for under-estimation of build capex where deployment is still ongoing, assumptions have been made regarding future trends in build capex. Similarly, actual public funding is accounted for alongside future public funding, which is derived from the PFM. Further details of this treatment can be found in the Annex.

Lastly, as regards gainshare and take-up clawback, based on discussions with BDUK, it is assumed that take-up review points occur in year 2, 4, 6, and 7 after the end of the deployment phase (with year 7 being the 'checkpoint F', marking contract closure). To this end, the deployment phase considered is that of the PFM.

<sup>&</sup>lt;sup>12</sup> Superfast Status Report Data by Contract – 30.09.2022

# **2 IRR** analysis

The following sections describe the results from the modelling exercise undertaken as part of the analysis of a sample of 27 Phase 3 contracts. The contracts were selected based on the availability of key sources of information facilitated by BDUK and the Local Bodies in charge of managing the tendering and delivery process (as described in Section 1.5). **[Redacted]**.

#### 2.1 IRR at bidding stage (IRR1 and IRR2)

The expected IRRs at bidding stage are based on the projected cash-flows provided by the network provider in its PFM for each contract over a 20-year period. These provide the estimated IRR of the proposed network build before and after the subsidy provided by BDUK. If the gap funding model is effective, subsidies should be allocated to projects that deliver an IRR that is lower than the cost of capital faced by supplier. Table 2.1: below summarises these two IRRs based on PFM data.

- Commercial viability without subsidy (IRR1): on average, the IRR associated with the contracts in scope is substantially lower than the supplier's WACC ([redacted]<sup>13</sup>) and [redacted]. This means that in the supplier's predictions, contracts would have been loss making in the absence of public funding.
- Commercial viability with subsidy (IRR2): for the contracts in scope, IRR2 (factoring in subsidy payments) was [redacted] on average. This is [redacted] below the supplier's WACC, which would suggest that these contracts would be unprofitable even with public funding. This could be explained if the network provider considered future profitability beyond the clawback period (from which all profits made would be retainable by the supplier), which would have raised longer-term returns. This is consistent with what was observed in previous phases of the programme<sup>14</sup>.

#### Table 2.1: IRR at PFM stage for contracts in scope

#### [Redacted]

Source: Ipsos' analysis based on PFM data.

#### 2.2 Build costs

Build costs are represented by capex, which includes expenses associated with FTTC and FTTP build, as well as Project Management Office (PMO) expenditure, and build costs listed as 'other' in the PFM.

At bidding stage, the expected qualifying costs associated with the network build for the contracts in scope were estimated by the supplier to be approximately £203m. As can be seen from Figure 2.1:, these predictions are likely to be exceeded in the medium term. Analysis of information and actual costs to date suggests:

- The total capex build cost will exceed £267m;
- The supplier is likely to incur additional costs of over £64m by FY 24/25 (when all build is expected to be completed) compared to what was originally planned;

<sup>&</sup>lt;sup>13</sup> As per PFM.

<sup>14.</sup> 

 Some exogenous factors responsible for project delays (as evidenced by lower-than-expected capex in the early years) might have eventually led to higher prices, for example in case of heightened competition in the industry for resources in short supply (e.g. skilled workers, components).

#### Figure 2.1: Build capex (baseline vs. modelling)

#### [Redacted]

Source: Ipsos' analysis based on PFM and Finance Tracker data.

## 2.3 Take-up

Take-up levels represent the number of premises connected to the network as a percentage of the total premises passed. Actual connections are used to forecast trends in opex and revenue, as well as any relevant clawback, and ultimately the IRR. The analysis models two distinct scenarios: one where take-up reaches a maximum of **[redacted]** of premises passed, and another where it reaches **[redacted]** (as explained in Table 1.1).

Figure 2.2 below compares the take-up level expected by the supplier at the PFM stage to actual (to date) and modelled (future) take-up. The key findings are listed below:

- **Expected take-up:** predictions of take-up at PFM stage ranged from [redacted] to [redacted].
- Actual take-up: after some delays in the initial quarters of deployment, where PFM take-up is higher than actual take-up, the level of take-up reached in FY 21/22 is [redacted].
- Future take-up: Under a [redacted] take-up assumption, beyond FY 21/22 take-up is expected to further increase up to [redacted], reaching over [redacted] premises across the 29 contracts<sup>15</sup>. Under the assumption of [redacted] take-up, the expectation would be that around [redacted] premises would take up Superfast broadband.

# Figure 2.2: Take-up ([redacted] and [redacted] take-up assumptions) [Redacted]

Source: Ipsos' analysis based on WSS/C3 reports.

Take-up is expressed as the ratio between the number of premises connected and the number of premises passed (or that will be passed, in the case of open contracts). In some cases, there are considerable differences between the expected number of premises to be passed at PFM stage, and the number of premises that WSS/C3 reports indicate as the target to be passed. This is likely to be due to change requests that have been approved throughout the lifetime of the contract and that have altered both the number and the type of premises to pass. This is illustrated in Table 2.2: below.

<sup>&</sup>lt;sup>15</sup> See section 1.6 for details on the selection criteria used to determine contracts in scope.

#### Table 2.2: PFM target premises and WSS/C3 target premises

### [Redacted]

Source: Ipsos' analysis based on WSS/C3 reports.

#### 2.4 Operating expenditure (opex)

Operating costs include network and wholesale connection opex, ongoing contractual reporting costs, and network component delivery support opex. PFM predictions and modelled opex are shown in Figure 2.3: below, alongside take-up. Opex is calculated using unit cost assumptions and take-up (see Appendix for methodological detail), therefore the results are presented under two scenarios ([redacted] and [redacted] take-up).

Under aa **[redacted]** take-up scenario, it appears that there is some minor underspend of opex compared to baseline estimates. Although take-up (as a percentage) is expected to be slightly higher than PFM predictions, the actual number of premises connected is lower than expected at PFM stage (as shown in Table 2.2), and therefore a lower opex than estimated at PFM stage. It is important to note that suppliers were not able to amend the assumptions made at PFM stage once the contract was signed. Opex is predicted to be slightly less than £11m lower than anticipated at PFM stage by the end of FY38/39<sup>16</sup>. However, costs are likely to be affected by the current inflationary context, as well as other contract-specific factors that might cause prices to rise.

# Figure 2.3: Opex ([redacted] take-up assumption) [Redacted]

Source: Ipsos' analysis based on PFM, Finance Tracker, and WSS/C3 reports data.

Figure 2.4: below presents opex under the second scenario, where take-up will reach **[redacted]**. In this case, modelled opex slightly exceeds the predictions made at PFM stage – this is in line with the fact that the modelled take-up is around **[redacted]** than the average take-up level expected at PFM stage. The supplier overspend is in the region of £9 million.

# Figure 2.4: Opex ([redacted] take-up assumption) [Redacted]

Source: Ipsos' analysis based on PFM, Finance Tracker, and WSS/C3 reports data.

#### 2.5 Revenue

Revenue is directly affected by take-up, (actual and modelled take-up, the latter modelled under both takeup scenarios), along with the average revenue per user (ARPU) figures provided in the supplier's PFMs. Monthly ARPUs (obtained from the contracts' PFMs) are reported in Table 2.3: below.

# Table 2.3: Monthly ARPUs [Redacted]

Source: PFM data.

<sup>&</sup>lt;sup>16</sup> End of the 20-year period.

ARPUs were used to predict supplier revenues over the lifetime of the contracts.

- Connections: revenue is directly affected by the number of premises connected. The take-up calculations and the estimated future take-up are based on the most up-to-date forecast of the target number of premises passed from WSS/C3 reports. However, in several cases, there are considerable differences between the number of premises considered to be in scope at PFM stage, and the number of target premises in WSS/C3 reports. This makes the comparison between PFM predictions of revenue and actual / future revenue more difficult.
- Future revenue: Based on the modelling exercise conducted, future revenue is estimated for [redacted] and [redacted] take-up separately. When considering the assumption of [redacted] take-up (Figure 2.5) revenue is lower than the expected at PFM stage by around £116.9m. Under the assumption of [redacted] take-up, revenue still falls short of PFM expectations, although the gap is reduced (around £48.8m) as a result of higher modelled take-up (Figure 2.6).

# Figure 2.5: Revenue ([redacted] take-up assumption) [Redacted]

Source: Ipsos' analysis based on PFM, Finance Tracker, and WSS/C3 reports data.

# Figure 2.6: Revenue ([redacted] take-up assumption)

## [Redacted]

Source: Ipsos' analysis based on PFM, Finance Tracker, and WSS/C3 reports data.

# 2.6 IRR before clawback (IRR3 and IRR4) under [redacted] take-up scenario

Table 2.4: below provides an illustration of IRR3 (before funding and before clawback) and IRR4 (after public funding but before clawback) under the assumption of **[redacted]** take-up. The main findings are outlined below:

- Commercial viability without subsidy: without subsidy, most contracts appeared to be lossmaking (IRR3), as the estimated IRR is below the supplier's WACC ([redacted]). Aside from two contracts ([redacted]), all contracts have a negative IRR3.
- **Commercial viability with subsidy:** given that build capex and opex on average have exceeded the original expectations, and that modelled revenues have not grown proportionally, the average estimated IRR4 is **[redacted]**, lower than the supplier's required WACC.

# Table 2.4: IRRs based on actual and modelled build costs, operational costs, and revenues, before clawback<sup>17</sup> ([redacted] take-up assumption)

#### [Redacted]

Source: Ipsos' analysis based on contract monitoring data.

<sup>&</sup>lt;sup>17</sup> Following scoping discussions, two contracts ([redacted]) are not included in this list due to the significant delays that have affected delivery.

### 2.7 IRR before clawback (IRR3 and IRR4) under [redacted] take-up scenario

Table 2.5 below presents the same IRRs but under the assumption that take-up reaches **[redacted]**. The main findings are outlined below:

- **Commercial viability without subsidy:** similar to the previous scenario, contracts are generally loss-making with the estimated IRR being below the supplier's WACC (**[redacted]**).
- **Commercial viability with subsidy:** the average estimated IRR4 (before clawback) is **[redacted]**, lower than the supplier's required WACC, but higher than in the case of the **[redacted]** take-up scenario due to the higher share of customers signing up for superfast broadband.

# Table 2.5: IRRs based on actual and modelled build costs, operational costs, and revenues, before clawback ([redacted] take-up assumption)

#### [Redacted]

Source: Ipsos' analysis based on contract monitoring data.

#### 2.8 Clawback

If suppliers underestimate build cost assumptions or if unexpected cost savings are made during the deployment phase, or if take-up is higher than expected originally, clawback mechanisms are in place to recoup public subsidy.

In order to reduce risk that suppliers earn excess returns, two types of clawback mechanisms are in-built in contractual arrangements, as described below:

- **Implementation clawback:** if suppliers underestimate build cost assumptions, or if unexpected cost savings are made during the deployment phase, the overall supplier's investment remains unaltered, whilst public funding is reduced accordingly. As such all underspend is recouped.
- **Take-up clawback:** where final take-up is higher than expected for any type of technology deployed, a portion of the extra profit made by the supplier is shared with the local body up to seven years after the contract closure date.

These are discussed in turn below, prior to the presentation of the IRR after clawback (IRR5).

#### 2.8.1 Implementation clawback

For a number of contracts, capex forecasted at PFM stage is higher than the actual and modelled capex that the supplier is expected to incur based on this analysis. These instances will trigger the implementation clawback, which seeks to prevent excess subsidy from being paid to the supplier. For example, the implementation clawback may kick-in if the number of premises to be passed has decreased following a change request. Implementation clawback totals around £18m across the contracts in scope.

#### 2.8.2 Take-up clawback

Take-up clawback is calculated at specific points in time throughout the lifetime of contracts. Take-up review points were assumed to be 2, 4, and 6 years after the end of the deployment phase as indicated in the PFM. In these quarters, actual and forecast take-up is compared to the take-up expected at PFM. The take-up clawback is then calculated based on the Project Unit Margin (PUM) of each contract, i.e. the average profit per customer over the term of the contract. If take-up is higher in the model, the take-up clawback mechanism kicks in, and clawback is calculated on the net additional take-up reached. In total, take-up clawback is expected to amount to around £9m.

#### 2.9 IRR after clawback (IRR5)

#### 2.9.1 IRR5 ([redacted] take-up assumption)

In the case of **[redacted]** take-up, applying clawback (on take-up and implementation) tends to bring down the profitability of contracts, as illustrated in Table 2.6 below. The average IRR5 across the contracts is – **[redacted]**, which suggests a lack of profitability. However, this is not to be expected where contracts are loss-making, as the gainshare mechanism is in place to redistribute profits. It is therefore assumed that there will be a capping in place to prevent clawback being retained from loss-making or under-performing contracts.

# Table 2.6: IRR based on actual and modelled build costs, operational costs, and revenues, after clawback<sup>18</sup> ([redacted] take-up assumption)

#### [Redacted]

Source: Ipsos' analysis based on contract monitoring data.

#### 2.9.2 IRR5 ([redacted] take-up assumption)

With the assumption of **[redacted]** take-up, IRR5 still suggest that contracts are generally loss-making (average IRR **[redacted]**), although the increased take-up leads to a less negative IRR compared to the previous scenario of **[redacted]** take-up.

# Table 2.7: IRR based on actual and modelled build costs, operational costs, and revenues, after clawback ([redacted] take-up assumption)

#### [Redacted]

Source: Ipsos' analysis based on contract monitoring data.

#### 2.10 Conclusions

The evidence suggests that post-clawback, IRRs are on average negative (**[redacted]** and **[redacted]** under the **[redacted]** and **[redacted]** take-up scenarios respectively). Contracts' IRR are either negative or below the cost of capital faced by the supplier (**[redacted]** WACC). Nevertheless, even without clawback, the average IRR across the portfolio reaches **[redacted]** and **[redacted]** under each scenario, which remain lower than the supplier's WACC. This suggests that public subsidy was required to deliver commercially sustainable networks under both take-up scenarios.

It would be expected that the clawback mechanism, in most cases, will not have been required as the supplier would not be making excess profits. Overall, the analysis suggests that public funding was required for the areas covered by the contracts in scope, and that there was not an incentive effect for the supplier.

<sup>&</sup>lt;sup>18</sup> Following scoping discussions, two contracts (SGOV202 and SGOV203) are not included in this list due to the significant delays that have affected delivery.

# **3 Appendix – Methodology**

This methodological appendix provides modelling of the expected future profitability of contracts awarded to suppliers under the Phase 3 of the UK National Broadband Scheme (known as Superfast Broadband programme). Although most contracts were still being delivered at the time of writing, this exercise should give an indication of future profitability of the contracts in scope.

## 3.1 Key evaluation question

This analysis addresses the following evaluation question, as per the Evaluation Plan:

- Has the aid had a significant incentive effect on the aid beneficiaries?
- Was the subsidy required to deliver commercially sustainable networks?

The aim of the analysis is to explore whether public subsidies were needed to provide an incentive to suppliers to extend FTTC and FTTP networks to the areas targeted by the programme. The approach adopted in this appendix is informed by the methodology agreed in the State Aid Evaluation Plan agreed between Building Digital UK (BDUK) and the European Commission. This involves comparing the expected rates of return on the investments made to the cost of capital faced by the supplier.

# 3.2 Contract design

### 3.2.1 Subsidy

Contracts are awarded by Local Bodies, with BDUK being the National Competence Centre. BDUK, in fact, is not party to the contract but enters a Grant Agreement (also called Budget Transfer Agreement) with the Local Bodies in order to disburse funding.<sup>19</sup> Under the model, the successful bidder designs, builds, owns, and operates the network and earns profits on the revenues generated by take-up of superfast coverage. This feature of the model aims to allow suppliers to leverage existing infrastructure whilst encouraging continuous investment in the network.<sup>20</sup>

As highlighted above, the funding is provided through a gap funding model, which seeks to prevent the network operator from bidding for more than the minimum subsidy required to deliver the project. The minimum subsidy is determined by the supplier's Project Financial Model (PFM), which is submitted as part of the tendering process. This provides *ex ante* estimates of the:

- Number of premises to receive subsidised coverage under the proposed network build (by type of technology)
- Capital and operational costs associated with the proposed network build
- Share of premises that will take up a superfast connection over time (including churn in customers)

<sup>19</sup> BDUK (2016). *Funding options for BDUK funded broadband infrastructure*. Accessed at:

<sup>&</sup>lt;sup>20</sup> Ibid.

- Average prices to be charged to customers taking up different packages and/or technologies
- Revenues earned from customers taking up Superfast services
- Operational and capital costs associated with connecting new customers to the network and providing superfast broadband services on an on-going basis
- The Weighted Average Cost of Capital (WACC) of the supplier

These expectations determine the expected rate of return (the IRR) that would be earned on the proposed network build. Subsidies were provided to the winning supplier in instalments following the completion of contractual milestones and for qualifying costs only. Qualifying costs refer to capitalisable expenditure directly attributable to delivering the deployed services and incremental to current business.<sup>21</sup>

### 3.3 Internal Rate of Return (IRR)

The internal rate of return (IRR) is the rate of return that brings the net present value of all inflows and outflows to zero (i.e. the rate of return on the project). If the IRR is positive, the revenue generated by the project exceeds the cost of capital, and therefore the project can be expected to be profitable. On the contrary, in the case of a negative IRR, the project is unlikely to generate profits, since the cost of capital is greater than the expected revenue. In symbols, the IRR is the value of r that renders the net present value of the project (*NPV*) zero.

$$NPV = \sum_{t=1}^{T} \frac{c_t}{(1+r)^t}$$

The net cashflow from the point of view of the supplier is equal to:

$$C_t = (S_t - CB_t) + R_t - (BC_t + O_t)$$

Here,  $(S_t - CB_t)$  represents the net subsidy received in period *t* (i.e. the subsidy less clawback returned to the public sector).  $R_t$  is the revenue earned in period *t*.  $(BC_t + O_t)$  represents the costs incurred by the supplier in terms of build costs  $(BC_t)$  and operational costs  $(O_t)$ . The IRR is sensitive to the overall time frame of the investment and the timing of expenses, revenues, and subsidy payments.

In this study, the IRR (before funding, after funding, and after clawback) are calculated based on the same formula used by suppliers in the financial models submitted along with their contract bids. In fact, a similar approach (i.e. replicating the modelling exercise undertaken by suppliers) has been adopted in order to update the analysis based on actual and modelled data, with the aim of estimating IRR after subsidy and after clawback, in light of actual take-up. The ensuing sections present in detail the methodology used to estimate the revised IRR.

#### 3.4 Data sources

The following sources of information have been used to develop the analysis:

<sup>&</sup>lt;sup>21</sup> BDUK (2020). Value for Money: Superfast. An Overview of Value for Money Analysis on the Superfast Programme.

- Project Financial Models (PFMs): tender participants were required to submit a PFM with their bid for contracts. As highlighted above, PFMs provide suppliers' expectations at the point of tendering<sup>22</sup> in relation to:
  - how many premises will be passed and when under the proposed scheme;
  - the costs associated with delivery broken down by type;
  - the level of expected take-up;
  - revenue forecasts;
  - on-going operational costs;
  - inflation.
- Finance Trackers: details on the actual costs incurred during build, as well as financing paid by the local body, are summarised by suppliers in Finance Trackers, submitted to local bodies and shared with BDUK.
- **WSS/C3:** the actual cumulative number of connected premises per quarter is reported in the WSS section of the C3 report, along with the total number of premises to be passed.
- Contract Summary Reports: This file contains information on the completion date (or forecast completion date) of all Superfast contracts.

Inflation has been recognised a risk to the supplier rates of return, however the effect to the supplier is not yet acknowledged by the programme and has not therefore been incorporated into the modelling of analysis. It is not anticipated that public subsidy to the supplier will increase as a result of rising costs as there are limitations as to what levers suppliers can claim for. Overspend on contracts is burdened by the supplier. There is anecdotal evidence reported to BDUK that **[redacted]** have employed various strategies to offset these costs themselves.

## 3.5 Limitations of the approach

The modelling exercise seeks to compare the original assumptions formulated by the bidder in the PFM with actual information and forecasts to predict future cashflows. However, the modelling exercise relies also on a number of assumptions (detailed in the subsequent sections), which are needed in order to complement the monitoring information held by BDUK (the National Competency Centre in the programme).

The analysis concerns a sample of 27 contracts **[redacted]**. These were the contracts for which roll-out had started by the time the analysis was carried out, and copies of PFMs, Finance Trackers, and WSS/C3 reports were held by BDUK. As regards WSS/C3 reports, the analysis considers the latest available report for all contracts. This is usually the status of connections in Q4 21/22.

<sup>&</sup>lt;sup>22</sup> PFMs can be updated at subsequent checkpoint 'E' (i.e. change requests) if applicable.

In addition to considerations around data availability, it needs to be underlined that there are known delays to deployment of the contracts under Phase 3. However, it is unclear whether this is due to a single factor or a number of the following reasons, which were mentioned during the course of interviews with suppliers and BDUK:

- Supply chain delays;
- Labour shortages, caused by increasing competition from market entrants and limited supply of qualified staff;
- Difficulties in the build;
- Wayleave issues;
- Value-for-money challenges;
- Project management challenges and planning amendments proposed by suppliers.

This means that the roll-out (i.e. deployment) timeline of most contracts might have changed compared to expectations at PFM stage. However, no data is available on the expected rate of premises passed, which could be used to determine future build capex beyond the end of the actual data available. In order to correct for under-estimation of build capex where deployment is still ongoing, assumptions have been made regarding future trends in build capex (Section 1.6). Similarly, actual public funding is accounted for alongside future public funding, which is derived from the PFM (Section 1.6).

Lastly, as regards gainshare and take-up clawback, based on discussions with BDUK, it is assumed that take-up review points occur in year 2, 4, 6, and 7 after the end of the deployment phase. To this end, the deployment phase considered is that of the PFM. The timing of gainshare influences IRRs.

# 3.6 Take-up

Take-up (i.e. the number of premises connected) is derived from a combination of actual and predicted information and is analysed separately for FTTC (where applicable) and FTTP.

Actual data on take-up is available up to and including Q4 FY 21/22 from C3 reports. After the last available quarter of actual data, take-up is forecast until the end of the contract period (20 years) via the following generalised logistic function:

$$(t) = A + \frac{K - A}{(1 + Q \cdot e^{-g \cdot t})^{\frac{1}{v}}}$$

The function ranges between a lower asymptote (A) and an upper asymptote (K). In addition, g is the growth rate, t the inflection point, and v (positive) influences the inflection point and the shape of the curve. In the model, the function takes the following specification:

$$take - up = \frac{K}{(1+1.4 \cdot e^{-g \cdot t})^{\frac{1}{p}}}$$

The function can only be positive (A = 0), since take-up increases on a quarterly basis. The function's upper limit (K), is set in turn at **[redacted]** and **[redacted]**, which is the level at which take-up is expected

to plateau, both for FTTC and FTTP<sup>23</sup>. In order to match actual connection data as closely as possible, the parameters g, v (with  $v \neq 0$ ) and Q are tailored to each contract's actual take-up curve to ensure that future predicted take-up is as close as possible to the functional shape of actual take-up. It follows that the higher the number of actual take-up quarters a contract has, the more accurate the form of the future take-up curve is.

### 3.7 Revenue

Actual and modelled take-up data is used to inform the calculation of revenue throughout the lifetime of each contract. Total revenue is composed of recurring and non-recurring revenue, described in detail below.

### 3.7.1 Recurring revenue

Recurring revenue (i.e. wholesale revenue<sup>24</sup>) is calculated for both FTTC and FTTP as follows:

```
Recurring revenue = Take-up * ARPU<sup>25</sup> * revenue inflation (deflation) assumption
```

The revenue inflation (deflation) assumption is assumed by the network operator as constant throughout the period and equal to 1.

### 3.7.2 Non-recurring revenue

The following types of non-recurring revenue have been considered for FTTC and FTTP churned volumes.

 Connection: the installation price included in PFMs and customer growth net of churn based on actual figures and predicted take-up afterwards:

Installation revenue = (connections + net customer growth) \* installation price \* revenue inflation (deflation) assumption

• Cease: this relates to the predicted termination of contracts:

Cessation revenue = cease volumes \* service cessation cost \* revenue inflation (deflation) assumption

• **CP:CP:** revenue deriving from customer migration:

*Migration revenue = CP:CP volumes \* service migration cost \* revenue inflation (deflation) assumption* 

All cost figures for installation, cessation, and migration have been derived from the PFMs. Inflation is assumed constant and equal to 1.

2022

<sup>&</sup>lt;sup>23</sup> In contracts where actual take-up exceeds **[redacted]**, the upper limit is equivalent to the take-up level in the last quarter of available data, rounded to the next integer.

<sup>&</sup>lt;sup>24</sup> Wholesale prices are defined as the prices that the network operator can charge other communications providers to gain access to telecoms services (i.e. the technology deployed). The provision of wholesale access is required by contract in compliance with State Aid rules. For further information: Ofcom (2020): Next Generation Access Glossary. Accessed at:

https://www.ofcom.org.uk/ data/assets/pdf file/0013/63220/nga glossary.pdf (last accessed: 20 September 2022).

 $<sup>^{\</sup>rm 25}$  Average revenue per user, derived from the PFM of each contract.

## 3.8 Opex

In line with the PFM, opex comprises three different components.

 Connection opex: For FTTC and FTTP, this includes the revised number of connections and the unit connection costs:

#### Connections\*connections opex<sup>26</sup>

- **Deployment closure opex:** This is included in the PFM but is negligible overall and is therefore excluded from the re-forecast exercise.
- Ongoing Contractual Reporting: This is taken directly from the PFM.
- GEA connection: for FTTC and FTTP:

(connections + customer growth net of churn) \* GEA

• Cease: for FTTC and FTTP:

ceased customers\*cease cost

GEA FTTx:

#### (CP:CP FTTP+CP:CP FTTC)\*GEA FTTx

If the PFM contained a change request that affected deployment opex, the revised total figure was spread across the same number of quarters of deployment opex as in the original PFM. Project delays might have impacted the timing of deployment opex; in the absence of a revised project timeline, deployment opex was accounted for in line with the PFM's original timeline. Nevertheless, opex forms a minimal amount of cost towards the total deployment cost, and therefore shifts in the timeline are unlikely to affect the overall calculation of IRR in a considerable manner.

#### 3.9 Public funding

Public funding information is derived from both the PFM and the Finance Tracker. Since most contracts were ongoing at the time when this analysis was carried out, in some cases it is possible that future payments are due by the Local Bodies to the supplier. Therefore, the model includes all the quarters of available actual data on public funding (until Q3 or Q4 21/22). In addition, if the difference between the PFM expected subsidy payments and the public funding received by the supplier is positive (i.e. at PFM stage, the expected subsidy was greater than what the supplier had received according to the Finance Tracker), the difference is either included as a lump-sum after Q3 21/22, or in instalments (spread over 4, 10, or 20 quarters, depending on the size of the outstanding public funding<sup>27</sup>).

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<sup>&</sup>lt;sup>26</sup> Includes FVA connections.

<sup>&</sup>lt;sup>27</sup> Examples of this are the SGOV202 and SGOV203 contracts, where over £120m and £84m of public funding were yet to be received by the supplier (Q3 2021/2022).

### 3.10 Capex

Eligible capex is incurred only during the build phase of contracts. For all contracts in scope, the revised capex figures include the three components listed below.

- **FTTC/FTTP build:** these costs depend on the type of infrastructure (FTTC or FTTP), including, for example, planning, access fibre cables, civils, fibre spine, access copper ties (for FTTC), and headends (for FTTP).
- Other capex: this includes costs that are common to both FTTC and FTTP.
- Project management office (PMO) capex: this includes project and contract management.

The supplier reports these figures for each contract in the contract's finance tracker. Thus, the model uses actual figures up to the last available quarter of available data (either Q3 or Q4 21/22).

However, to date most contracts are still open, which might mean that additional capex is yet to be incurred by the supplier on those contracts. Whilst the underlying approach to actual capex is the same for both open and closed contracts, closed contracts include an assumption relating to future capex.

For contracts that are still open at the time of this analysis, future capex is estimated differently depending on the difference between the supplier's estimates at PFM stage and actual data reported in the WSS/C3.

- If capex predicted in the PFM is lower than actual capex at the time of the analysis, the average
  of the last third of actual capex (FTTC+FTTP+FTTx+PMO) is distributed across each quarter up to
  and including the final quarter as indicated in BDUK's Summary Report.
- If PFM capex is higher than the capex spent to date, the contract is likely to be in the early stages of deployment, and therefore the difference between PFM capex and actual capex is divided in equal instalments throughout the expected build period, up to and including the final quarter of build as per BDUK's Summary Report.

#### 3.11 Clawback

Clawback is calculated for build capex and take-up.

#### 3.11.1 Capital clawback

Capital clawback is calculated based on build capex and is determined by comparing build capex incurred and future build capex with the baseline prediction of build capex provided by the supplier in the PFM. The calculation of capital clawback relies on the two main elements indicated below.

- **Baseline build estimate:** this is the expected build capex calculated by the supplier at bidding stage.
- Revised build capex: this is the sum of the actual build capex spent to date by the supplier and, in the case of open contracts, it includes assumed future capex.

#### 3.11.2 Take-up clawback

Take-up clawback calculations are based on data from various sources, as illustrated in Table 1.1.

#### Table 3.1: Gainshare and clawback

Component	Source
Actual and forecast connections	C3 report and modelling forecast
Variance in connections	Difference between C3 report/modelling forecast and PFM information
PUM	PFM
Project investment ratio (PIR)	PFM
Gainshare investment ratio (GIR)	Equals Outturn Investment Ratio (OIR)
Take-up review points	At year 2, 4, 6, and 7 from contract start date as per BDUK guidance

# 3.12 Cash flow

The previously determined revenue, opex, and capex, as well as any clawback, have been used to calculate cashflow throughout the project timeline. The structure of the cashflow is summarised in Table 3.2: below.

Cashflow item	Source		
Revenue	PFM (ARPUs) and revised take-up (Section 1.3)		
Opex	PFM (opex inputs) and revised take-up (Section 1.4)		
EBITDA	revenue – opex		
Build Capex	Finance tracker and assumptions (only open contracts) (Section 1.5)		
Adjusted cashflow pre-funding	EBITDA – capex		
Public funding	Finance tracker. If differences exist between BDUK records of paid public funding and the PFM, the difference is added in the quarter following the last quarter of available data. In the case of contracts with large sums of funding yet to be paid (>£10m), the remainder is spread equally across several quarters.		
Adjusted cashflow post funding	cashflow pre-funding + public funding		
Capital Clawback	Calculated (Section 1.6.1)		
Take-up Clawback	Calculated (Section 1.6.2)		
Clawback capping	Where take-up clawback is above net funding ( <i>total public funding – capital clawback</i> ), it triggers a capping of the clawback		

#### Table 3.2: Cash flow

Total clawback	capital clawback + take-up clawback + capping	
Adjusted cashflow post-clawback	cashflow post funding – clawback	
Baseline IRR pre-funding	Baseline IRR before state aid estimated by the network operator at the time of bid	
Baseline IRR post-funding	Baseline IRR post state aid estimated by the network operator at the time of bid	
Updated IRR (pre-funding pre-clawback)	Modelled IRR before state aid and clawback	
Updated IRR (pre-clawback)	Modelled IRR post state aid but before clawback	
Updated IRR (post-clawback)	Modelled IRR post state aid post clawback	

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# ISO 20252

This is the international market research specific standard that supersedes BS 7911/MRQSA and incorporates IQCS (Interviewer Quality Control Scheme). It covers the five stages of a Market Research project. Ipsos was the first company in the world to gain this accreditation.



## Market Research Society (MRS) Company Partnership

By being an MRS Company Partner, Ipsos endorses and supports the core MRS brand values of professionalism, research excellence and business effectiveness, and commits to comply with the MRS Code of Conduct throughout the organisation. We were the first company to sign up to the requirements and self-regulation of the MRS Code. More than 350 companies have followed our lead.



# ISO 9001

This is the international general company standard with a focus on continual improvement through quality management systems. In 1994, we became one of the early adopters of the ISO 9001 business standard.



## ISO 27001

This is the international standard for information security, designed to ensure the selection of adequate and proportionate security controls. Ipsos was the first research company in the UK to be awarded this in August 2008.



# The UK General Data Protection Regulation (GDPR) and the UK Data Protection Act (DPA) 2018

Ipsos is required to comply with the UK GDPR and the UK DPA. It covers the processing of personal data and the protection of privacy.



## HMG Cyber Essentials

This is a government-backed scheme and a key deliverable of the UK's National Cyber Security Programme. Ipsos was assessment-validated for Cyber Essentials certification in 2016. Cyber Essentials defines a set of controls which, when properly implemented, provide organisations with basic protection from the most prevalent forms of threat coming from the internet.



#### **Fair Data**

Ipsos is signed up as a "Fair Data" company, agreeing to adhere to 10 core principles. The principles support and complement other standards such as ISOs, and the requirements of Data Protection legislation.

# For more information

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#### About Ipsos Public Affairs

Ipsos Public Affairs works closely with national governments, local public services and the not-for-profit sector. Its c.200 research staff focus on public service and policy issues. Each has expertise in a particular part of the public sector, ensuring we have a detailed understanding of specific sectors and policy challenges. Combined with our methods and communications expertise, this helps ensure that our research makes a difference for decision makers and communities.

