GDQ36 – Annex 2:

Applying a Productivity Factor to Costs

Evidence from both SGN at RIIO-GD1 D, and the UBLE report find that the productivity of underground work in London is *at least* 15.5% lower than non-London regions. The productivity difference means that where a non-London network might complete 100 metres of underground workload in a week, an identical network operating in London could only complete 85.5 metres. The London network therefore requires additional labour, plant, and other costs to complete the full 100 metres of repex workload.

However, the productivity difference does *not mean* that the London network incurs 15.5% extra cost than the non-London network. To calculate the additional cost value, we must convert the 15.5% productivity difference into a cost difference. In fact, with a productivity difference of 15.5%, a network that covers the entire London region would incur 18.34% in additional cost compared to the non-London network. To see this, we provide an example below.

Consider two networks: a **London** network that serves the London region in its entirety and does not operate in any non-London region, and a **non-London** network. The London network experiences 15.5% lower productivity on all underground work than the non-London network. Otherwise, both networks have the following, identical attributes.

- **Team cost** (including labour, plant hire, and other costs) of £50 per hour for underground work; and
- **Workload target** of 100 metres in underground work.

The non-London network completes 100 metres of underground workload in 100 hours (at 1 metre per hour), for a total cost of £5000. The London network, however, requires 118.34 hours to complete the same 100 metres of workload (at 0.845 metres per hour). The additional cost for the London network is therefore:

$$Cost_{non-London} \times 1.1834 = Cost_{London}$$

$$5000 \times 1.1834 = 5917.16$$

Equivalently:

$$\frac{Cost_{London}}{1.1834} = Cost_{London} \times 0.845 = Cost_{non-London}$$

We provide full details of our calculation in the Table below

Converting A Productivity Difference into A Cost Difference

	Calculation	London	Non-London
Hourly team cost (£)	A	50	50
Productivity (m/hour)	B	0.845	1.00
Target workload (m)	C	100	100
Time to complete 100m (hours)	D = C / B	118.34	100
Cost to complete 100m (£)	F = A * D	5,917	5,000

Source: Cadent analysis.