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# **Perth and Kinross**

## **NGA Broadband Plan**

### **Executive Summary**

Within Scotland there is a gap in the national plans for Next Generation Access (NGA) Broadband Plan. There are plans for the North of Scotland and for the South of Scotland, these being Pathfinder North and Pathfinder South. Central Scotland will be covered commercially but the current Telecoms companies. This leaves Perth and Kinross with no plan for NGA.

This proposal for Perth and Kinross is to go straight to Fibre to the Premises (FttP) to create a future proof NGA and supply the bandwidth requirements for the next 30 years. The reason to go straight to FttP rather than to incrementally upgrade the existing services as bandwidth is required is that a great deal of investment is required to do this. Followed by more re-investment in the same area over several stages to get to the same end point of FttP. As this is the desired end point then there is no benefit in going through the preceding stages to get there. This will mean areas will suffer from poor or no connectivity for a greater period of time, but they will get the final solution sooner than they would have if the interim steps were taken.

The financial model is based on a third way, not for profit company, which will re-invest all operating surpluses into more network build rather than paying its shareholders. This produces a self-supporting business model initially financed by a grant funding. The model will build FttP to 100% of the premises in Perth & Kinross (approximately 70K premises) in 9 years. This will require £100 Million in initial grant funding and will self-finance another £100 Million in investment from its own network revenues. This will leave a self-sustaining independent infrastructure business that can continue to build FttP and continue to increase its revenue without further Government funding.



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# **1. Introduction**

Rural Scotland is being depopulated as young people migrate to towns and cities for work. As the areas depopulate there are less and less jobs and resources in these rural locations, so the migration increases. Part of the lack of recourse is access to high speed broadband. Access to high speed broadband enables businesses to be created and for people to working from home.

Currently there are plans in the North of Scotland and the South of Scotland to help address this issue of lack of high speed broadband in these rural areas. As central Scotland is the heaviest population area it is assumed that the commercial providers will supply this area with high speed broadband as customers require it. This leaves Perth and Kinross as the only area in Scotland with no plan for high speed broadband access. This document aims to address this issue.

## ***1.1. Background***

Rural areas are not being served well by the current major telecoms operators. BT is only upgrading exchanges as they can meet their commercial requirement or subsidy from national or local governments'. Virginmedia appear to be intent on only serving their current install base and are not expanding their networks beyond this, they are providing services outside their cable areas with the re-sell of BT services only.

The current commercial operators are not going to make the investments necessary to provide high speed broadband to rural areas unless they are subsidised to do so, but the problem with this kind of straight subsidy is that you only get a single benefit from the subsidy. The operator will take the money and build the asset, then passes any profits from this asset on to its shareholders. So the next town or village will need to be subsidised in the same way until you have paid to build the operators network and you do not get any additional benefits from this investment.

## ***1.2. The Solution***

If you moved to a third way, not for profit company to build and operate the infrastructure then the entire operating surplus will be re-invested into building more infrastructure. So long as the initial investment is large enough to start with, that enough infrastructure is built to accrue a reasonable operating surplus to continue building network in a meaningful way. This allows the company to self-finance the rest of the build. Then you effectively double up on your initial investment. This will ultimately reduce the total subsidy required and creates new efficient economic activity.

This plan is based around going straight to Fibre to the Premises (FttP), this is because the final solution would be FttP anyway. It will be difficult enough to get the investment together to do any single solution. It will be doubly difficult to get re-investment to replace one solution with on other in a few years' time. So invest once in the final solution that will last at least 30 years. This means that some premises will not have any high speed broadband for longer than if you put in an interim solution, but once they have it there will be no need for any future upgrades.

## **2. Financial Model**

A cash flow model has been created to demonstrate how the FttP infrastructure can be built and financed. It has been based on an initial funding of £100M this will cover 50% of the total build cost of £200M, the other 50% will come from the operating surplus from the infrastructure company. Therefore the initial investment will be doubled up by using a not for profit company. All the figures are detailed in the appendixes. The model allows for 100% of the premises in Perth and Kinross to be built to over a nine year period. Most of the initial investment will be spent over the first four years and the following five years of build that will be self-financed from the operating surplus. Once this build is complete other areas could be added or the service charges reduced and all the monies generated will be kept within the company and not disappear of to investors or shareholders.

### ***2.1. Assumptions***

The fibre installation costing's and geographic typing of each premise has been generated along the same lines as the analysys mason report for the Broadband Stakeholder Group ([http://www.broadbanduk.org/component/option,com\\_docman/task,doc\\_view/gid,1036/Itemid,63/](http://www.broadbanduk.org/component/option,com_docman/task,doc_view/gid,1036/Itemid,63/)).

The number of premises and location has been taken from BT data available on SamKnows (<http://www.samknows.com/broadband/exchanges/bt/adsl>). The BT exchange data give a split of business and residential customers that averages out to be 90% residential and 10% non-residential. For this geographic typing it is assumed that 10% of the premises attached to each exchange are greater than 1km from the exchange.

### ***2.2. Cash Flow model***

The model shows that with a high build rate to start enough infrastructures can be built so that the operating surplus can be used to complete the build. The build rate drops down in year six and seven because of restricted operating surpluses, but then as the revenues increases the build rate can be increased again showing the self-financing element of the model. Over the first nine years £200 million is invested to complete the build from an initial £100 million of public funding. Once the original area is completed the surplus can be used to expand the network beyond the initial area. This will continue to self-finance network build indefinitely.

The model starts with the initial £100 million investment and builds to the first 15% of premises in the first year costing £27 million, accruing £1 million in interest and £1 million on operating surplus from the services provided, leaving £74 million to be carried over to the second year. In the second year 20% of the premises are built to at a cost of £37 million, giving an operating surplus of £5 million. This leaves £42 million to the next year. In the third year another 20% would be built at a cost of £38 million, with an operating surplus of £9 million and a closing balance of £13 million. In the fourth and fifth years the build is reduced to 10% per year as the initial investment fund is used up and the revenue starts to finance the build. This drop again to 5% in years six and seven but in years eight and nine the surplus is great enough to complete the build at 10% each year.

### ***2.3. Conclusions***

A £100 million funded project would be able to build a rural FttP network in Perth and Kinross over a period of nine years. This will be a total of £200 million of investment but the second half of this will be self-funded so no additional funding would be required.

## **3. Build Plan**

The build will be driven by demand, the biggest overhead is building past premises without them taking service. The first tasks will be to stimulate demand. This will be achieved by running a race to infinity style website to get penitential customers to pre-register of the services. Local media will be engaged and road shows run across the region to get the message out. All national and local government sites will be required to take connections as they become available to help drive demand.

### ***3.1. Pre-Build Phase***

The pre-build phase will be used to make the technology and equipment selections. Finalise the detailed design of the architecture to be used. This will then drive the size and types of locations needed to house the equipment across the region. A site in Perth will then be identified to house the main office and data centre. This will then be connected to national infrastructure to backhaul the data back to the service providers.

At the same time a small team of highly skilled staff will be put together to manage and oversee the project from start to finish. They will be empowered to use their skills to the full to complete this work efficiently and effectively. This will make the organisation small, nimble and delivery centric.

The detailed planning then needs to get going, to plan the fibre routes between the fifty seven towns and villages that will house the active elements of the network. Locations will then be identified in each of these places. All this information will be published as it is finalised to help involve the local communities in the build programme. The main targets will be the top thirteen towns of over one thousand premises. But the pre-registrations will drive the order the network is built. The rule of thumb would be if a place can get to 50% pre-registrations then they will be moved to the top of the list on the build order, but other places on the way to these targets may get added if the costs to do this are expectable.

### ***3.2. Build Phase***

Once the cabinet location have been finalised and all the permissions granted then the build phase will start. This will be an evolving process and the main driver will be pre-registrations and locally run campaigns to get location to meet the build thresholds. Outside priorities may adjust the direction of the build. The plans will be publicised in each locality to help involve all the residents in the process. As the plan will evolve over time, then constant communication will be required. By identifying all the cabinet locations at the beginning of the project, then some of the more remote premises can plan their own self build programmes to that location to speed up their time to connection. By having a complete clear plan from the start effort will not be wasted by revisiting locations.

The build strategy will be to connect as many customers as possible as soon as possible to start to accrue revenue as early as possible. This is key to getting to the point where the build can be self-financing. This will mean that as the network is built out along a road or valley,

the first town that is reached will be built out to all their premises before moving on to the next town.

The first target will be Perth as it is by far the largest town in the area. The next big targets are the thirteen one thousand plus towns: Blairgowrie, Crieff, Kinross, Auchterarder, Scone, Pitlochry, Stanley, Bridge Of Earn, Alyth, Coupar Angus, Comrie, Aberfeldy & Invergowrie.

The actual build will be contracted out to specialist companies both the construction of the ducts and the installation of the fibre. This will be done on a fixed price basis, so each section of the construction will be an individual fixed price construction job. Local contractors will be encouraged to bid to complete this work as well as be commissioned by third parties to complete other sections of the build. Installers will be trained and registered to have the competency to complete installations.

### ***3.3. Post Build***

Once each section of the build is completed, the customers will be connected to the network and services provisioned. These services will not be provided by the infrastructure company they will be provided by other service providers. The customer will be customers of the service providers not the infrastructure company. The customer's first point of contact for information or faults will be the service providers themselves. Only qualified faults will be passed to the infrastructure company if it's found to be an infrastructure fault. This will negate the need for public facing customer care but will require skilled second and third line support engineers to support the service providers. Again this will help to minimise the staffing requirements allowing the company to stay small and agile.

## **4. Summary**

With ambition, determination and the investment of £100 million it is possible to give all of the seventy thousand premises in Perth and Kinross a full Fibre to the Premises very high speed bandwidth broadband solution. By going straight to FttP there is no need to waste time and money deploying interim solutions that will be superseded by Fibre. With a not for profit company building and operating the network, the profits have to be re-invested into more infrastructure. By not allowing the infrastructure company to provide end user services on the network it allows all the service providers to compete openly against each other to provide new and innovative services.

## 5. Appendix

### 5.1. Exchange Data

Exchange name	Post Code	Residential	Non-Residential	Total
Aberfeldy	PH152AD	1111	99	1210
Abernethy	KY138BU	674	22	696
Almondbank	PH13NJ	864	53	917
Alyth	PH118AS	1430	94	1524
Amulree	PH80BZ	49	11	60
Auchterarder	PH31AD	2486	180	2666
Balbeggie	PH26HF	447	44	491
Ballinluig	PH90LG	326	49	375
Bankfoot	PH14BJ	642	64	706
Blackford	PH41QB	330	23	353
Blacklunans	PH107JZ	69	6	75
Blair Atholl	PH185SG	304	26	330
Blairgowrie	PH106EZ	4290	273	4563
Braco	FK159QR	470	20	490
Bridge Of Balgie	PH152PP	58	9	67
Bridge Of Cally	PH107JL	146	22	168
Bridge Of Earn	PH29AB	1462	64	1526
Bridge Of Gaur	PH172QD	74	7	81
Burrelton	PH139NZ	411	27	438
Butterstone	PH80HA	80	14	94
Calvine	PH185UA	93	12	105
Caputh	PH14JL	557	38	595
Cleish Hills	KY130LR	126	4	130
Comrie	PH62EB	1199	73	1272
Coupar Angus	PH139BW	1313	89	1402
Crieff	PH73JR	3548	277	3825
Dunkeld	PH80AD	826	86	912
Dunning	PH20RH	568	43	611
Errol	PH27QH	729	55	784
Essendy	PH106SG	138	33	171
Fossoway	KY130UR	584	31	615
Gask	PH31HR	120	20	140
Glenalmond	PH13RX	189	31	220
Glencarse	PH27LX	738	29	767
Glenfarg	PH29NW	464	41	505
Glenlyon	PH152NH	31	7	38
Glenshee	PH107QD	42	7	49
Inchture	PH149RW	634	40	674
Invergowrie	DD25DB	1140	69	1209
Kenmore	PH152LE	370	37	407
Kinloch Rannoch	PH165PW	235	23	258
Kinross	KY138BU	3416	183	3599

Kinrossie	PH26HP	267	40	307
Longforgan	DD25HF	598	17	615
Madderty	PH73PA	273	50	323
Meigle	PH128RY	424	42	466
Meikleour	PH26DZ	145	25	170
Methven	PH13QE	620	56	676
Muthill	PH52AD	416	51	467
Perth	PH28HU	22553	1447	24000
Pitlochry	PH165BZ	1709	226	1935
Rait	PH27RT	176	35	211
Scone	PH26QW	2358	100	2458
Scotlandwell	KY139JE	487	13	500
St Fillans	PH62NF	113	12	125
Stanley	PH14NN	1511	63	1574
Strathardle	PH107NX	242	20	262
Strathtay	PH90PJ	221	30	251
Trochry	PH80DY	51	13	64
Tummelbridge	PH165SA	95	10	105

Data taken from SamKnows (<http://www.samknows.com/broadband/exchanges/bt/adsl>).

## 5.2. Geo Data

Group Name	Description	Residential	Non-Residential	Total	90%/10% Split
Group 1	Inner London	0	0	0	0
Group 2	Major City (pop = 500K+	0	0	0	0
Group 3	City (pop = 200K+	0	0	0	0
Group 4	>20k lines, <2km from exchange	22553	1447	24000	21600
Group 5	>20k lines, >2km from exchange	0	0	0	2400
Group 6	>10k lines, <2km from exchange	0	0	0	0
Group 7	>10k lines, >2km from exchange	0	0	0	0
Group 8	>3k lines, <1km from exchange	22210	1460	23670	21303
Group 9	>3k lines, >1km from exchange	0	0	0	2367
Group 10	>1k lines, <1km from exchange	13261	905	14166	12749.4
Group 11	>1k lines, >1km from exchange	0	0	0	1416.6
Group 12	<1k lines, <1km from exchange	7018	773	7791	7011.9
Group 13	<1k lines, >1km from exchange	0	0	0	779.1

This is calculated by totalling up all the connection of each exchange and allocating them to their geographic group type as laid out by analysys mason in their report for the Broadband Stakeholder Group

([http://www.broadbanduk.org/component/option.com\\_docman/task.doc\\_view/gid,1036/Itemid,63/](http://www.broadbanduk.org/component/option.com_docman/task.doc_view/gid,1036/Itemid,63/)).Model Parameters

### 5.2.1. Geographic Splits and Costs

Group Type	Termination Equipment	Average Cabling cost	Population	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Group 1	100	1800	0	15%	20%	20%	10%	10%	5%	5%	10%	5%	0%	100%
Group 2	100	2000	0	15%	20%	20%	10%	10%	5%	5%	10%	5%	0%	100%
Group 3	100	2000	0	15%	20%	20%	10%	10%	5%	5%	10%	5%	0%	100%
Group 4	100	1900	21,600	15%	20%	20%	10%	10%	5%	5%	10%	5%	0%	100%
Group 5	100	4000	2,400	15%	20%	20%	10%	10%	5%	5%	10%	5%	0%	100%
Group 6	100	2000	0	15%	20%	20%	10%	10%	5%	5%	10%	5%	0%	100%
Group 7	100	4200	0	15%	20%	20%	10%	10%	5%	5%	10%	5%	0%	100%
Group 8	100	1800	21,303	15%	20%	20%	10%	10%	5%	5%	10%	5%	0%	100%
Group 9	100	4200	2,367	15%	20%	20%	10%	10%	5%	5%	10%	5%	0%	100%
Group 10	100	2000	12,749	15%	20%	20%	10%	10%	5%	5%	10%	5%	0%	100%
Group 11	100	7600	1,417	15%	20%	20%	10%	10%	5%	5%	10%	5%	0%	100%
Group 12	100	3800	7,012	15%	20%	20%	10%	10%	5%	5%	10%	5%	0%	100%
Group 13	100	12000	779	15%	20%	20%	10%	10%	5%	5%	10%	5%	0%	100%

These groups and average costs are taken from report by analysys mason for the Broadband Stakeholder Group, as above ([http://www.broadbanduk.org/component/option,com\\_docman/task,doc\\_view/gid,1036/Itemid,63/](http://www.broadbanduk.org/component/option,com_docman/task,doc_view/gid,1036/Itemid,63/)).

### ***5.2.2. Other Parameters***

Inflation	2.50%	
Bond Interest	0.50%	
Residential Rental	£20.00	per month
Business Rental	£50.00	per month
Residential / Business Split	90.00%	
Rental charge	£23.00	per month
Additional services	£2.00	per month
Growth rate additional services	5.00%	per year
Overheads	£15.00	per customer year
Terminal equipment failure rate	2.5	units per thousand each year
Cable failure rate	10	Installations per thousand per year
Tax Depreciation	25.00%	on reducing balance
Corporation Tax rate	30.00%	

### 5.3. Modelled Cash Flow

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Statistics</b>										
Opening customer base M	0.0000	0.0104	0.0244	0.0383	0.0453	0.0522	0.0557	0.0592	0.0661	0.0696
Closing customer base M	0.0104	0.0244	0.0383	0.0453	0.0522	0.0557	0.0592	0.0661	0.0696	0.0696
Connections Group 1	0	0	0	0	0	0	0	0	0	0
Connections Group 2	0	0	0	0	0	0	0	0	0	0
Connections Group 3	0	0	0	0	0	0	0	0	0	0
Connections Group 4	3,240	4,320	4,320	2,160	2,160	1,080	1,080	2,160	1,080	0
Connections Group 5	360	480	480	240	240	120	120	240	120	0
Connections Group 6	0	0	0	0	0	0	0	0	0	0
Connections Group 7	0	0	0	0	0	0	0	0	0	0
Connections Group 8	3,195	4,261	4,261	2,130	2,130	1,065	1,065	2,130	1,065	0
Connections Group 9	355	473	473	237	237	118	118	237	118	0
Connections Group 10	1,912	2,550	2,550	1,275	1,275	637	637	1,275	637	0
Connections Group 11	212	283	283	142	142	71	71	142	71	0
Connections Group 12	1,052	1,402	1,402	701	701	351	351	701	351	0
Connections Group 13	117	156	156	78	78	39	39	78	39	0
Total Connections	10,444	13,925	13,925	6,963	6,963	3,481	3,481	6,963	3,481	0
Connection cost Group 1	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Connection cost Group 2	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Connection cost Group 3	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Connection cost Group 4	£7	£9	£9	£5	£5	£3	£3	£5	£3	£0
Connection cost Group 5	£2	£2	£2	£1	£1	£1	£1	£1	£1	£0
Connection cost Group 6	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Connection cost Group 7	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Connection cost Group 8	£6	£9	£9	£4	£5	£2	£2	£5	£3	£0

Connection cost Group 9	£2	£2	£2	£1	£1	£1	£1	£1	£1	£0
Connection cost Group 10	£4	£6	£6	£3	£3	£2	£2	£3	£2	£0
Connection cost Group 11	£2	£2	£2	£1	£1	£1	£1	£1	£1	£0
Connection cost Group 12	£4	£6	£6	£3	£3	£2	£2	£3	£2	£0
Connection cost Group 13	£1	£2	£2	£1	£1	£1	£1	£1	£1	£0
Customer base Group 1	0	0	0	0	0	0	0	0	0	0
Customer base Group 2	0	0	0	0	0	0	0	0	0	0
Customer base Group 3	0	0	0	0	0	0	0	0	0	0
Customer base Group 4	3,240	7,560	11,880	14,040	16,200	17,280	18,360	20,520	21,600	21,600
Customer base Group 5	360	840	1,320	1,560	1,800	1,920	2,040	2,280	2,400	2,400
Customer base Group 6	0	0	0	0	0	0	0	0	0	0
Customer base Group 7	0	0	0	0	0	0	0	0	0	0
Customer base Group 8	3,195	7,456	11,717	13,847	15,977	17,042	18,108	20,238	21,303	21,303
Customer base Group 9	355	828	1,302	1,539	1,775	1,894	2,012	2,249	2,367	2,367
Customer base Group 10	1,912	4,462	7,012	8,287	9,562	10,200	10,837	12,112	12,749	12,749
Customer base Group 11	212	496	779	921	1,062	1,133	1,204	1,346	1,417	1,417
Customer base Group 12	1,052	2,454	3,857	4,558	5,259	5,610	5,960	6,661	7,012	7,012
Customer base Group 13	117	273	429	506	584	623	662	740	779	779
Conn. Failure cost Group 1 £M	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Conn. Failure cost Group 2 £M	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Conn. Failure cost Group 3 £M	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Conn. Failure cost Group 4 £M	£0.06	£0.15	£0.24	£0.29	£0.35	£0.38	£0.41	£0.48	£0.51	£0.53
Conn. Failure cost Group 5 £M	£0.01	£0.04	£0.06	£0.07	£0.08	£0.09	£0.10	£0.11	£0.12	£0.12
Conn. Failure cost Group 6 £M	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Conn. Failure cost Group 7 £M	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Conn. Failure cost Group 8 £M	£0.06	£0.14	£0.23	£0.28	£0.33	£0.36	£0.39	£0.44	£0.48	£0.49
Conn. Failure cost Group 9 £M	£0.02	£0.04	£0.06	£0.07	£0.08	£0.09	£0.10	£0.12	£0.12	£0.13
Conn. Failure cost Group 10 £M	£0.04	£0.09	£0.15	£0.18	£0.22	£0.24	£0.26	£0.30	£0.32	£0.33
Conn. Failure cost Group 11 £M	£0.02	£0.04	£0.06	£0.08	£0.09	£0.10	£0.11	£0.12	£0.13	£0.14

Conn. Failure cost Group 12 £M	£0.04	£0.10	£0.16	£0.19	£0.23	£0.25	£0.27	£0.31	£0.33	£0.34
Conn. Failure cost Group 13 £M	£0.01	£0.03	£0.06	£0.07	£0.08	£0.09	£0.09	£0.11	£0.12	£0.12
Total Conn. Failure cost £M	£0.26	£0.63	£1.01	£1.23	£1.45	£1.59	£1.73	£1.98	£2.14	£2.19
Terminal failure cost £M	£0.00	£0.01	£0.01	£0.01	£0.01	£0.02	£0.02	£0.02	£0.02	£0.02
<b>Cash Flow</b>										
Income (Line rentals) £M	£1	£5	£9	£13	£15	£17	£19	£21	£23	£25
Income (Additional services) £M	£0	£0	£1	£1	£2	£2	£2	£3	£3	£3
Total income	£2	£6	£10	£14	£17	£19	£21	£24	£27	£28
Overheads	£0	£0	£1	£1	£1	£1	£1	£1	£1	£1
Maintenance	£0	£1	£1	£1	£1	£2	£2	£2	£2	£2
Operating surplus	£1	£5	£9	£12	£15	£17	£18	£21	£23	£25
Connection cost	£27	£37	£38	£20	£20	£10	£11	£22	£11	£0
Opening balance	£100	£74	£42	£13	£5	-£0	£6	£14	£13	£25
Investment cost	£27	£37	£38	£20	£20	£10	£11	£22	£11	£0
Operating surplus	£1	£5	£9	£12	£15	£17	£18	£21	£23	£25
Interest	£1	£0	£0	£0	£0	-£0	£0	£0	£0	£0
Tax	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Annual Surplus	-£26	-£32	-£29	-£7	-£6	£6	£8	-£1	£12	£25
Closing balance	£74	£42	£13	£5	-£0	£6	£14	£13	£25	£50
<b>Tax Computation</b>										
Tax asset value brought forward	0.00	20.54	43.48	61.39	60.79	60.71	53.28	47.90	52.20	47.50
Assets added	£27	£37	£38	£20	£20	£10	£11	£22	£11	£0
Depreciation	£7	£14	£20	£20	£20	£18	£16	£17	£16	£12

Closing asset balance	£21	£43	£61	£61	£61	£53	£48	£52	£47	£36
Operating surplus before tax	£1	£5	£9	£12	£15	£17	£18	£21	£23	£25
Less: Depreciation	£7	£14	£20	£20	£20	£18	£16	£17	£16	£12
Taxable Profit (loss)	-£6	-£10	-£12	-£8	-£6	-£1	£2	£3	£7	£13
Tax Loss Carried forward	-£5.58	-£15.45	-£27.20	-£35.32	-£40.94	-£41.96	-£39.55	-£36.32	-£29.02	-£16.37
Corporation Tax	0	0	0	0	0	0	0	0	0	0