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Dear Colleague

Freight caps – consultation on variable usage charge (VUC) and freight only line charge initial cost estimates

Purpose

1. In its Periodic Review 2013 (PR13) first consultation ORR requested views on whether it should once again place a cap on certain freight charges in advance of its final determination[1]. It noted that such a move by ORR could be linked to commitments by the freight community to reduce whole industry costs.

2. The purpose of the work discussed in this letter is to calculate initial cost estimates that could inform early caps on CP5 freight VUCs and freight only line charges, if, subject to consultation responses, ORR considers this to be appropriate.

3. Please note that because freight variable usage costs are a subset of total (passenger and freight) variable usage costs, the methodology employed below is relevant to both freight and passenger operators. Hence, although the primary purpose of this work is to estimate freight variable usage costs, we would also like to take this opportunity to be transparent about the initial variable usage cost estimates associated with passenger traffic. We are, therefore, copying this letter to passenger as well as freight stakeholders.

[1] In PR08 ORR took account of the particular circumstances freight operators face by placing a cap on freight VUCs and freight only line charges well in advance of its final determination.

Introduction

4. On 13 September 2011 Network Rail issued an industry letter[2] setting out its proposed methodology for calculating initial cost estimates that could inform caps on freight VUCs and freight only line charges in Control Period 5 (CP5). Further, on 19 October 2011 we presented our emerging analysis to stakeholders at the monthly variable track access charge (VTAC) developments meeting. We found the discussion with stakeholders at this meeting very helpful and intend to continue using this forum as a way of augmenting industry consultations on VUCs and freight only line charges during PR13.

5. We have now calculated initial VUC and freight only line charge cost estimates. This letter seeks your views on these initial cost estimates and the methodology that we have applied in order to calculate them, our specific consultation questions are set out in Annex A.

6. All terms in this paper are in 2011/12 prices and at end CP4 efficiency unless stated otherwise. We are aware that operators will, naturally, be primarily interested in the charges that they will pay for 'access to the network'. This letter, however, focuses on costs. Ultimately it is for ORR to determine access charges, as part of the PR13 process. In PR08, VUCs and freight only line charges were set at end CP5 and end CP4 efficiency respectively. Hence, charges payable by operators could be lower than the, below, cost estimates because they could incorporate additional efficiency targets.

Variable usage charges

7. The VUC is designed to recover Network Rail's operating, maintenance and renewal costs that vary with traffic. In economic terms, this reflects the short run incremental cost. The charge ensures that we are compensated for the wear and tear that results from additional traffic on the GB rail network.

8. We have estimated total variable usage costs using broadly the same methodology as in PR08. That methodology uses a 'bottom up' approach to estimating track variable usage costs, and a 'top down' approach to estimating non-track (civils and signalling) variable usage costs.

[2] Network Rail, PR13 – Freight caps, 13 September 2011. Available at: http://www.networkrail.co.uk/uploadedFiles/networkrailcouk/Contents/Publications/Delivery_Plans/Control_Period_5_delivery_plan/Planning_for_CP5/FreightCapIndustryLetter.pdf

9. The initial variable usage cost estimates, below, are expressed in terms of thousand gross tonne kilometres (kgtkm) rather than thousand gross tonne miles (kgtm), reflecting the manner in which we forecast future traffic levels. We note, however, that operators are charged based on kgtm and that the, below, cost estimates can be converted from kilometres to miles by applying a conversion factor of 1.609.

Initial track cost estimate

10. We have estimated initial track costs using the following models, which were also used to inform the recently published Initial Industry Plan (IIP):

    - **Vehicle Track Interaction Strategic Model (VTISM)**. VTISM was developed for the cross-industry group Vehicle/Track Systems Interface Committee (V/T SIC)[3] in response to the need to directly relate rolling stock characteristics and track characteristics to track damage, and thus to renewal and heavy maintenance requirements. It is used widely by the rail industry because it uses engineering science to accurately predict track degradation and the remedial effects of heavy maintenance and renewal.

    - **Strategic Route Section Maintenance Model (SRSMM)**. We use the SRSMM to estimate light maintenance costs based on strategic route section (SRS) activity volumes. For each activity key track characteristics are chosen (e.g. the number of defects) and the model normalises activity volumes in accordance with these chosen track characteristics. The model adjusts activity volumes in response to changes in the populations of these track characteristics, as predicted by VTISM for different traffic scenarios.

11. Please note that the above models estimate activity volumes rather than costs. In order to estimate costs it is necessary to multiply the activity volumes forecast by the models by the relevant unit cost rates. For the purpose of this analysis we have used the same unit cost rates that informed the IIP.

12. A summary of the steps we followed in order to estimate initial track variable usage costs for freight and passenger traffic is set out below:

[3] V/T SIC is a cross-industry group which aims to develop understanding of the vehicle/track interface and use this knowledge to assist industry in moving towards a more optimised, whole life, whole system solution. V/T SIC has representation from across industry including Network Rail, ATOC, Freight Operators, RoSCos, RIA, DfT, ORR and RSSB.

- **Establish end CP4 baseline costs**. This cost estimate is based on VTISM and SRSMM activity volumes for forecast end CP4 traffic levels (2013/14). The activity volumes are translated into costs by multiplying them by the relevant unit cost rates.

- **Estimate how baseline costs would change assuming hypothetical +5%, +10% and +20% traffic scenarios**. We estimated changes in renewal and heavy maintenance costs for the different traffic scenarios using VTISM. VTISM initially estimates the extent of additional wear caused by the incremental traffic. The renewal and refurbishment activity volumes are then increased in VTISM to replicate the track condition in the original baseline scenario. The incremental activity volumes required to replicate the track condition in the original baseline scenario are then translated into costs by multiplying them by the relevant unit cost rates. Changes in light maintenance costs were estimated by running the SRSMM using the track characteristics predicted by VTISM under the different traffic scenarios. The activity volumes were translated into costs by multiplying them by the relevant unit cost rates. To 'smooth out' the potentially 'lumpy' periodic impact of increased traffic on renewals we have modelled average activity volumes over a 35 year modelling horizon (CP5-CP11). You may recall that in our industry letter dated 13 September 2011 we proposed estimating cost changes assuming +/- 5% and +/- 10% traffics scenarios. However, the initial results from VTISM for the -5% and -10% traffic scenarios were counter-intuitive. The primary reason for this is that the track asset management policies incorporated in VTISM do not consider scenarios in which traffic volumes decline because this situation is deemed to be unlikely to occur (based on the robust level of traffic growth over recent years). In any case, the IIP is forecasting continued growth in traffic levels, so the decrements originally envisaged are less relevant. We, therefore, selected the additional +20% traffic scenario on the basis that it retains the 20% range originally envisaged.

- **Calculate an average track vehicle cost per thousand gross tonne kilometres (kgtkm)**. We calculated this rate by dividing the incremental increase in annual renewal, heavy maintenance and light maintenance costs (£48.5m) for the +20% traffic scenario by the incremental increase in tonnage (36.1m kgtkm) for the same scenario. This gives rise to an average rate for freight and passenger traffic of £1.34 per kgtkm[4]. We choose the +20% traffic

[4] 2011/12 prices end CP4 efficiency.

scenario because the regression line takes account of all three data points (+5%, +10% and +20%)[5].

- **Multiply the average vehicle cost per kgtkm by forecast end CP4 baseline traffic to estimate total track renewal and heavy maintenance costs**. We forecast that total freight and passenger traffic in 2013/14 will be 180.5m kgtkm and, therefore, total track renewal, heavy maintenance and light maintenance costs will be £242.4m[6].

Initial non-track cost estimates

13. As one would expect the vast majority of variable usage costs relate to track wear and tear. However, in CP4 approximately eleven percent of variable usage costs related to wear and tear on civils and signalling assets. These costs were estimated using 'top down' variability assumptions based on engineering judgement. Set out in Table 1, below, is a breakdown of CP4 annual variable usage costs and, where appropriate, the 'top down' variability assumptions that were applied in order to estimate them.

Table 1: CP4 annual variable usage costs (2011/12 prices at end CP4 efficiency)

Asset	**Variable usage cost (£m)**	**'top down' variability assumption**
Track	221	N/A
Metallic underbridge renewals	19	20%
Embankments renewals	2	6%
Signalling maintenance	6	5%
Brick and Masonry underbridge renewals	0	0%
Culverts renewals	0	0%
Minor works points renewals	0	0%
Total	**248**	

14. As part of our new work to inform PR13 we have reviewed the 'top down' variability assumptions applied in CP4. Following this review we consider that it is appropriate to retain the 20% and 6% variability assumptions applied to metallic underbridge and embankment renewals respectively.

[5] The average rates for the +5% and +10% traffic scenarios were £1.38 and £1.35 respectively (2011/12 prices end CP4 efficiency).
[6] 2011/12 prices end CP4 efficiency.

15. However, based on engineering judgement and experience ‘on the ground’ in CP4, we consider that it is appropriate to extend the 20% variability assumption applied to metallic underbridges to masonry and brick underbridges. Masonry arches suffer stress reversals under load and heavy 25 tonne axle bogie freight wagons cause stress reversals of up to 3 times the magnitude of other traffic particularly at certain ratios of bogie spacing to arch span. It has also been found that the risk is higher on multispan arches where the intermediate piers deflect more easily. Bridges on curves also are at higher risk due to the load being concentrated on the rail adjacent to the spandrel. We now know that the existing heavy axle traffic is affecting many arches and any new heavy axle freight flows will cause us to identify, monitor and undertake precautionary works to structures that fall in the highest risk groups in terms of configuration. Such precautionary work is likely to be the installation of tie rods and whalings at the simplest and track off and reinforced concrete saddle as the most long lasting strengthening solution. Based on local experience (e.g. high profile viaduct failures in Scotland) we believe that the impact of traffic on masonry and brick underbridges maybe greater than that on metallic ones and, therefore, the 20% variability assumption is, if anything, a prudent one.

16. In addition, based on engineering judgement, we also consider that it is appropriate to apply a 5% variability assumption to culverts. Culverts are under track crossings that accommodate watercourses or service pipes with a span less than 1800mm. Many are robust by virtue of their construction or depth of cover; however, those at shallow depth are effectively small masonry underbridges and thus are impacted in the same way as underbridges by traffic, resulting in stress reversals and degradation. We, therefore, consider that it is appropriate to apply a variability factor to culverts, albeit one lower than that which we have applied to masonry and brick underbridges.

17. We also reviewed the variability assumption applied to signalling maintenance costs in CP4. Following this review we consider, based on engineering judgement, that it is appropriate to increase this assumption from 5% to 6%. The revised 6% assumption is an average based on a review of the variability of each of the signalling maintenance cost sub-categories. The variability assumptions that we have applied to the subcategories that we consider vary with traffic are set out in Table 2 below.

Table 2: Signalling maintenance variability

Sub category	Traffic impact	Maintenance impact	Percentage variability
Train Detection	Vibration and traction interference	Increased response to remote condition monitoring (more alerts / alarms)	2.5%
Points	Vibration and frequency of Operation	Increased response to remote condition monitoring (more alerts / alarms) and increased maintenance (brushes / adjustment / lubrication)	18.0%
Level Crossings	Frequency of operation	Increased maintenance (brushes / adjustment / lubrication / abuse)	14.0%
Rapid response	Increased asset failures	Increased rapid response work in proportion to the number of failures	7.5%

18. Moreover, based on expert judgement, we also consider that a 44% variability assumption should be applied to minor works points renewals. Traffic impacts the need for points renewals through additional vibration causing the physical fracture of components, physical connections to wear loose and sealed delicate components to mechanically fail. Increases in traffic cause extra stresses on motors, pumps, actuators and components used for transferring force to the rails ultimately resulting in failure.

19. Finally, we continue to consider that telecoms and buildings maintenance and renewal costs do not vary with traffic and, therefore, do not need to be recovered through the VUC.

20. Table 3, below, summarises our initial estimates of CP5 non-track variable usage costs and the variability assumptions applied in order to derive them.

Table 3: Non track variable usage cost estimates (2011/12 prices end CP4 efficiency)

Asset type	Annual average (£m)	Percentage variability	Variable usage cost (£m)
Civils:			
Embankment renewals	32.4	6%	1.9
Metallic underbridge renewals	48.7	20%	9.7
Brick and Masonry underbridge renewals	92.7	20%	18.5
Culverts renewals	9.2	5%	0.5
Signalling:			
Maintenance	137.2	6%	8.2
Minor works points renewals	12.2	44%	5.4
Total variable usage cost			**44.3**

21. The costs shown in Table 3, above, are annual averages that we have modelled using our infrastructure Cost Model (ICM). Consistent with the track modelling, these costs have also been modelled over a 35 year (CP5-CP11) modelling horizon in order to 'smooth out' the impact of periodic renewals.

Initial cost summary

22. Total variable usage costs comprise the sum of track and non-track variable usage costs. Table 4, below, summarises our initial CP5 variable usage cost estimates.

Table 4: Initial cost summary (2011/12 prices end CP4 efficiency)

Asset type	£m per year
Track:	**242.4**
Track maintenance and renewals	242.4
Civils:	**30.7**
Embankments renewals	1.9
Metallic underbridge renewals	9.7
Brick and Masonry underbridge renewals	18.5
Culverts renewals	0.5
Signalling:	**13.6**
Maintenance	8.2
Minor works points renewals	5.4
Total	**286.7**

23. We can derive an average vehicle cost for freight and passenger traffic of £1.59 per kgtkm[7] by dividing our initial estimate of total variable usage costs (£286.7M) by forecast end CP4 traffic (180.5m kgtkm). This average vehicle cost is 8% higher (12p) than the CP4 average vehicle cost of £1.47 per kgtkm[8]. A key driver of this increase is the inclusion of variable usage costs in respect of cost categories that were excluded in CP4 (brick and masonry underbridge renewals, culverts renewals and minor works point renewals). If variable usage costs in relation to these cost categories were excluded the CP5 average vehicle cost for freight and passenger traffic would be £1.45 per kgtkm[9], 1.3% (2p) lower than the CP4 average vehicle cost.

24. It is possible to estimate discrete average vehicle cost rates for freight and passenger traffic by apportioning costs between the two traffic types and dividing by forecast end CP4 baseline tonnage. For the purpose of our estimates we have apportioned costs using the CP4 allocation methodology. This methodology categorises costs as follows:

    - Track (excluding surface damage);
    - Structures (Civils); and
    - Track surface damage (30% of total track variable usage costs).

25. The costs in each of these categories are then apportioned between freight and passenger traffic based on equivalent tonnage. Table 5, below, is based on analysis of the CP4 VUC modelling, it shows the gross tonnage split between the two traffic types and the cost splits (based on equivalent tonnage) for each of the, above, cost categories. We consider that this methodology is, at present, the most appropriate way of apportioning costs between freight and passenger traffic.

Table 5:CP4 cost splits

Traffic type	Gross tonnage	Track cost (excluding surface damage)	Structures cost (civils)	Track surface damage cost
Passenger	68%	69%	46%	82%
Freight	32%	31%	54%	18%

[7] 2011/12 prices end CP4 efficiency.
[8] 2011/12 prices end CP4 efficiency.
[9] 2011/12 prices end CP4 efficiency.

26. Based on the above relationships between gross and equivalent tonnage we have apportioned our initial estimate of total variable usage costs between freight and passenger traffic, see Table 6 below:

Table 6: CP5 cost splits

	Gross tonnage	Track cost (excluding surface damage)	(%)	Structures cost (civils)	(%)	Track surface damage cost	(%)	Total	(%)
Passenger	72%	133.1	73%	15.5	50%	61.3	84%	**209.8**	**73%**
Freight	28%	50.2	27%	15.2	50%	11.5	16%	**76.9**	**27%**
Total	**100%**	**183.3**	**100%**	**30.7**	**100%**	**72.7**	**100%**	**286.7**	**100%**

27. We have divided the initial freight and passenger variable usage cost estimates in Table 6, above, by forecast end CP4 baseline traffic in order to estimate discrete average vehicle cost rates[10]. For freight traffic this equates to an average vehicle cost of £1.51 per kgtkm[11], 11% (15p) higher than the CP4 average vehicle cost of £1.36 per kgtkm[12]. For passenger traffic it equates to an average vehicle cost of £1.62 per kgtkm[13], 6% (10p) higher than the CP4 average vehicle cost of £1.52 per kgtkm[14]. Again a key driver of these increases is the inclusion of variable usage costs in respect of cost categories that were excluded in CP4 (brick and masonry underbridge renewals, culverts renewals and minor works point renewals). If variable usage costs in relation to these cost categories were excluded the discrete average vehicle cost rates for freight and passenger traffic would be £1.30 per kgtkm[15] (6p lower) and £1.51 per kgtkm[16] (1p lower) respectively.

28. It should be noted that in order to compare our initial variable usage cost estimates with the relevant CP4 values it was necessary to make the following adjustments:

[10] We estimate passenger and freight variable usage to be £209.8m and £76.9m respectively and passenger and freight baseline traffic to be 129.6m kgtkm and 50.9m kgtkm respectively.
[11] 2011/12 prices end CP4 efficiency.
[12] Calculated based on costs and tonnage attributable to freight traffic in the CP4 VUC model (2011/12 prices end CP4 efficiency).
[13] 2011/12 prices end CP4 efficiency.
[14] Calculated based on costs and tonnage attributable to passenger traffic in the CP4 VUC model (2011/12 prices end CP4 efficiency).
[15] 2011/12 prices end CP4 efficiency.
[16] 2011/12 prices end CP4 efficiency.

- **Convert the CP4 values from end CP3 efficiency to end CP4 efficiency** by applying a 22% efficiency overlay. This is consistent with the end CP4 maintenance and renewal efficiency improvement determined by ORR in PR08.

- **Inflate the CP4 values from 2006/07 prices to 2011/12 prices** by applying an indexation factor of 1.162

Level of possible variable usage charge cap

29. A cap on freight VUCs could take the following forms:

- A maximum absolute £m value based on forecast traffic levels, or
- A maximum average £ per kgtkm vehicle cost rate.

30. Network Rail considers that the most appropriate way of placing a cap on freight VUCs would be to set a maximum average £ per kgtkm rate for freight traffic. This should help avoid any cap being set too low or too high in light of unforeseen variations in freight traffic and reflects the fact that the variable usage costs that we incur are contingent upon traffic volumes. Moreover, we believe that there would be greater merit in using the freight average vehicle cost rate (£1.51 per kgtkm[17]) when capping charges than the total (passenger and freight) average vehicle cost rate (£1.59 per kgtkm[18]) because it will reflect more closely the average variable usage costs that freight vehicles are likely to incur in CP5. We, therefore, propose that our initial freight average vehicle cost rate of £1.51 per kgtkm[19] should form a suitable basis for placing a cap on freight VUCs rates in CP5.

31. We note, however, that the cost modelling and / or assumptions that form the basis of our VUC modelling could be refined during PR13. For example, as VTISM and the SRSMM are audited and reviewed. In addition, the CP5 VUC model that will determine specific vehicle charges has not yet been developed and, therefore, the actual split of variable usage costs between freight and passenger traffic is likely to change. Therefore, consistent with the approach in PR08, we consider that it would be prudent to place a confidence interval around our initial cost estimates of +/- 20%. Because a cap is a 'one way bet' (actual

[17] 2011/12 prices end CP4 efficiency.
[18] 2011/12 prices end CP4 efficiency.
[19] 2011/12 prices end CP4 efficiency.

charges could be lower but not higher) we propose that it could be prudent to cap charges at upper limit of this confidence interval. Uplifting the initial freight average vehicle cost estimate by 20% results in a value of **£1.81 per kgtkm**[20].

Freight only line charges

32. The freight only line charge is designed to recover a proportion of the fixed costs that Network Rail incurs in respect of freight only lines. It is currently levied as a mark-up on the VUC on a £ per kgtm basis.

33. At present the charge is only levied on segments of the market that ORR concluded (as part of PR08) are able to bear the fixed cost of freight only lines. In PR08 ORR concluded that only two market segments had the ability to bear these costs, coal for the electricity supply industry (coal ESI) and spent nuclear fuel.

Market analysis

34. ORR is currently conducting a market analysis that will review the ability of different market segments to bear the fixed costs of freight only lines. Because the results of this analysis are not yet available we have estimated total costs for all freight only lines. Following ORR's determination in respect of the market segments that it considers are able to bear the fixed cost of freight only lines we will refine our analysis accordingly.

35. It should be noted that, separately and as part of Network Rail's response to ORR's first PR13 consultation, we proposed that where segments of the freight market are deemed to be able to bear more than the marginal cost of operating on the network, consideration should be given to these segments contributing to network-wide fixed costs and not just the fixed costs of freight only lines[21]. Mindful of the fact that some rail freight customer contracts run for several years, we suggested that consideration may need to be given to any such changes being phased in.

36. If it is concluded that certain segments should contribute to network-wide fixed costs, we would anticipate that the freight only line charge would be replaced with a mark-up on variable usage charges for all journeys made by those commodities.

[20] 2011/12 prices end CP4 efficiency.
[21] Periodic Review 2013: First Consultation – Network Rails response, page 102. Available at: http://www.networkrail.co.uk/uploadedFiles/networkrailcouk/Contents/Publications/Delivery_Plans/Control_Period_5_delivery_plan/Planning_for_CP5/ORRFirstPR13ConsultationFull.pdf

Methodology

37. In PR08 a freight only line was defined as follows[22]:

"*A freight-only line is one that:*

- *would close if freight services ceased to operate;*
- *includes segments of branches used only by freight traffic; and*
- *is a terminal line.*

Freight-only lines do not include:

- *through lines, as these provide operational benefits for the mixed-use network;*
- *freight-only sections that are used for passenger diversionary traffic or empty coaching stock on a normal basis;*
- *freight-only lines on which there is a realistic prospect of extensive passenger services;*
- *goods/slow lines that run parallel to passenger lines; and*
- *lines where franchised passenger services have access rights regardless of how frequently they are used.*"

38. For the purpose of the work described in this letter we have retained the existing definition of a freight only line and estimated initial freight only line costs using broadly the same methodology as in PR08:

- **Identified an initial list of all freight only lines**. The initial list of freight only lines that we have identified is set out in Annex B. We would welcome your views on all aspects of this list.

- **Estimated the total cost of these lines using our ICM**[23]. These cost estimates are based on strategic route section (SRS) total costs and asset counts on individual lines comprising the SRS. Consistent with our approach in PR08 we have used lower unit renewal costs (80% of the network average) to reflect the reduced scope of work and easier access to freight only lines. However, at present, we do not have sufficiently granular estimates of related

[22] Network Rail Strategic Business Plan update, structure of charges supporting document, page 25, April 2008.
23 Total costs comprise directly attributable costs and related renewals costs.

renewals costs[24]. Therefore, for the purpose of the illustrative cost estimates, below, we have applied a mark-up based on CP4 costs. Specifically, we have applied a 24% (£1.9m) mark-up to total coal ESI costs and a 14% (£0.22m) mark-up to total spent nuclear fuel costs. Following the publication of this letter we will continue working to improve our related renewals cost data.

- **Make an adjustment to reflect the fact that lines can carry multiple commodities, some of which ORR may conclude are not able to bear the fixed costs of freight only lines**. Consistent with our approach in PR08 we propose adjusting for this by reducing, pro-rata, the total cost estimates based on tonnage (kgtkm). However, as discussed in more detail below, for some of the coal ESI and spent nuclear fuel freight only lines we do not, at present, have robust traffic data. Therefore, for the purpose of the illustrative cost estimates, below, we have applied a 'top down' adjustment based on expert judgement. The adjustments that we have applied in respect of each line are set out in Annex B.

- **Deducted variable usage costs associated with traffic on the freight only lines**. The above cost estimate represents the total annual cost of renewing and maintaining each freight only line, reduced pro-rata to reflect the fact that lines can carry multiple commodities. We recover the variable usage costs associated with these lines through the VUC; therefore, this amount must be deducted to estimate the residual fixed costs to be recovered through the freight only line charge. Consistent with the VUC analysis, above, we have deducted £1.51 per kgtkm[25] using 2010/11 traffic data in order to estimate fixed costs. However, for 9 out of the 27 coal ESI (16% of total cost) freight only lines and 2 out of the 6 spent nuclear fuel (22% of total cost) freight only lines we do not, at present, have robust traffic data in order to estimate variable usage costs. Therefore, for the purpose of the illustrative cost estimates, below, we have assumed that we will receive 16% of the costs to be recovered through the VUC. The 16% 'top down' assumption is an average based on the coal ESI and spent nuclear fuel freight only lines for which we have traffic data. Following the publication of this letter we will continue working to improve our traffic data for the lines where we have applied a 'top down' assumption.

[24] Related renewals costs relate primarily to signalling and telecoms renewals at junctions between freight only lines and the mixed traffic network.
[25] 2011/12 prices end CP4 efficiency.

Initial cost summary

39. For illustrative purposes our initial cost estimates, below, assume that freight only line charges will continue to apply to coal ESI and spent nuclear fuel. As noted above, in reality the commodities that are deemed capable of paying fixed costs will be determined by ORR's market analysis work and we will refine our analysis accordingly, after ORR has concluded its work. It is our understanding that ORR is to conclude on freight caps and freight mark ups in April 2012 (including the decision whether to have freight caps at all), but will consult on its proposals prior to that, at which point we will revisit our analysis for other commodities if appropriate.

40. Our initial cost estimates, based on the freight only line list in Annex B, indicate that the total cost to be recovered annually in CP5 through the freight only line charge for coal ESI and spent nuclear fuel would be £6.79m and £1.54m respectively. Table 7, below, compares these values to the relevant CP4 values.

Table 7: Freight only line costs (2011/12 prices end CP4 efficiency)

	CP5	CP4	£m change	% change
Coal ESI	6.79	5.25	1.54	29%
Spent Nuclear Fuel	1.54	0.84	0.7	83%

41. Underlying the, above, CP5 initial cost estimates is an increase in the number of coal ESI and spent nuclear fuel track kilometres of 10% and 68% respectively. These increases reflect the revised freight only line list in Annex B and are key reasons for the increase in the initial cost estimates.

42. It was not necessary to apply an efficiency adjustment to the CP4 freight only line charge cost estimates in order to compare them with our initial CP5 estimates because the CP4 estimates included in ORR's PR08 final determination are stated at end CP4 efficiency. It was necessary, however, to inflate the CP4 values from 2006/07 prices to 2011/12 prices by applying an indexation factor of 1.162.

Level of possible freight only line charge caps

43. If ORR's market analysis concludes that only coal ESI and spent nuclear fuel continue to be able to bear the fixed costs of freight only lines, we propose that the initial CP5 cost estimates set out in Table 7, above, could form a suitable basis for placing a cap on freight only line charges. Placing a cap on charges in

the form of a maximum £m value reflects the fact that the freight only line charge is designed to recover fixed costs that are invariant with traffic.

44. We note, however, that the cost modelling and / or assumptions that form the basis of these cost estimates could be refined during PR13. For example, following review and audit of the ICM, or amendments to the initial list of freight only lines.

45. Therefore, consistent with the approach in PR08, we propose that it would be prudent to place a confidence interval around our freight only line charge cost estimates of +/- 20%. Moreover, we propose that because a cap is a 'one way bet' (actual charges could be lower but not higher) it would be prudent to cap charges at upper limit of this confidence interval. Uplifting the coal ESI and spent nuclear fuel initial cost estimates set out, above, by 20% results in respective estimates of **£8.15m**[26] and **£1.85m**[27].

Other considerations

46. We understand that ORR, in considering whether to place a cap on certain freight charges in advance of its final determination, is also mindful of the industry's cost challenge. Consistent with this, it is our understanding that ORR is asking the rail freight industry, in collaboration with Network Rail, to consider ways of reducing costs associated with freight usage of the network. There are several ways in which this challenge is being taken forward such as potentially reducing freights 'go anywhere' access to the network, which should yield reduced long term costs on certain parts of the network. Another possibility being greater flexibility in relation to the allocation of capacity to freight traffic.

Next steps

47. Annex A sets out key consultation questions in relation to this work. We would welcome any feedback you have on the detail of this letter and / or the questions in Annex A by close of play **Friday 27 January 2012**. We intend to publish responses to this letter on our website and, therefore, kindly request that you make clear if any part of your response is confidential.

48. Please address responses by post to:

[26] 2011/12 prices end CP4 efficiency
[27] 2011/12 prices end CP4 efficiency

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49. or by email to: Ben.Worley@networkrail.co.uk.

50. Following careful consideration of consultation responses we aim to conclude on this consultation in February 2012. We will conclude in the form of a letter to ORR, which we will also publish on our website.

51. In summer 2012 we are aiming to issue a detailed consultation that explains how we propose translating our VUC and freight only line charge cost estimates into indicative individual vehicle charges. This consultation will inform the proposed individual vehicle charges in our January 2013 Strategic Business Plan.

52. If you would like to discuss any aspect of this letter please do not hesitate to contact Ben Worley or myself.

Yours sincerely,

Peter Swattridge

Head of Regulatory Economics

Annex A: Key consultation questions

Variable usage charges

1. What are your views on the range of traffic scenarios (+5%, +10% and +20%) that we used to model costs?

2. What are your views on our proposal to use the +20% traffic scenario to estimate an average track vehicle cost per kgtkm?

3. What are your views on our proposed 'top down' variability assumptions that we have applied in order to estimate non-track variable usage costs?

4. What are your views on our proposal to apportion costs between freight and passenger traffic based on the CP4 allocation methodology?

5. What are your views on our proposal that the most appropriate way of placing a cap on charges is likely to be to determine a maximum average £ per kgtkm rate for freight traffic (as opposed to a maximum £m absolute value)?

6. What are your views on our proposed confidence interval of +/- 20%?

7. What are your views on our proposal that it would be prudent to cap charges at the upper limit of our +/- 20% confidence interval i.e. £1.81 per kgtkm?

8. Do you have any other comments?

Freight only line charges

9. What are your views on the freight only line definition established in PR08?

10. What are your views on the initial list of freight only lines set out in Annex B?

11. What are your views on the track kilometres contained in the freight only line list in Annex B?

12. What are your views on the commodity traffic splits contained in the freight only line list in Annex B?

13. What are your views on our proposed methodology to adjust for the fact that some lines carry multiple commodities? Where freight only lines carry multiple commodities our proposal would (consistent with the approach in CP4) be to charge those commodities deemed capable of paying toward fixed costs based on their share of total tonnage (kgtkm) conveyed on these lines?

14. What are your views on our proposed confidence interval of +/- 20%?

15. What are your views on our proposal that it would be prudent to cap charges at the upper limit of our +/- 20% confidence interval i.e. £8.15m and £1.85m for coal ESI and spent nuclear fuel respectively?

16. Do you have any other comments?

Annex B: Freight Only line List

Explanatory Notes

1. Lines that carry coal ESI and spent nuclear fuel are shown separately from those carrying other commodities.
2. Lines that do not carry coal ESI and spent nuclear fuel have been attributed "Other" in respect of the commodity type.
3. A commodity % has not been included for non coal ESI and spent nuclear fuel lines because ORR's market analysis is not yet complete.
4. "Retained" lines were considered to be freight only in PR08 and are also considered to be freight only in PR13.
5. "New" lines were not included in the PR08 list of freight only lines.
6. COM = Change of Mileage.

Coal ESI and spent nuclear fuel list

ELR	Route	Retained / New	Commodity	Line Name	Track km	Commodity (%)	Expert traffic judgement (Y/N)
AYH1	SCO	Retained	Coal ESI	Ayr Harbour to Newton Jn	1.22	90%	Y
BGE	LNE	Retained	Coal ESI	Boldon East Jn and Boldon West Jn – Tyne Dock	2.53	92%	Y
BRI2	LNE	Retained	Coal ESI	Immingham to Ulceby	11.39	40%	N
BWC	LNE	Retained	Coal ESI	Marchey's House to NR/Alcan Boundary	4.37	23%	N
BWO2	LNE	Retained	Coal ESI	Butterwell Jn – Signal B1	0.97	100%	N
DRA1	LNE	Retained	Coal ESI	Drax Branch Jn – Drax Power Station	13.52	80%	N
EUB	WALES	Retained	Coal ESI	Uskmouth – East Usk Jn	2.96	100%	Y
HAC	LNE	Retained	Coal ESI	Firbeck Jn – Harworth Colliery	5.52	100%	Y
HJS	LNE	Retained	Coal ESI	Hessle Road South Jn – Hull Docks	9.31	87%	N
KCH1	SCO	Retained	Coal ESI	Annbank to Killoch	8.47	100%	N
KSH	SCO	Retained	Coal ESI	Bank Jn – Greenburn Jn	1.07	100%	Y

ELR	Route	Retained / New	Commodity	Line Name	Track km	Commodity (%)	Expert traffic judgement (Y/N)
LHS1	SCO	Retained	Coal ESI	Portobello Jn – Leith South Yard	4.44	88%	N
MJI1	LNW	Retained	Coal ESI	Madeley Jn to Ironbridge	10.01	92%	N
NAB	WALES	Retained	Coal ESI	Neath and Brecon Jn - Onllwyn	16.26	43%	N
SCT1	LNW	Retained	Coal ESI	Bootle Branch Jn – Regent Road LC	3.46	80%	N
TYB1	LNE	Retained	Coal ESI	Cottam Powergen to Clarborough Jn	11.56	90%	N
VON	WALES	Retained	Coal ESI	Cwmgwrach - Neath and Brecon Jn	12.99	100%	Y
VON	WALES	Retained	Coal ESI	Hirwaun – Aberdare	5.79	99%	N
WAT	SCO	Retained	Coal ESI	Dalrymple to Chalmerston	14.81	99%	N
WKC	LNE	Retained	Coal ESI	Welbeck Colliery Jn – Welbeck Colliery	4.49	95%	N
WSB	LNE	Retained	Coal ESI	West Sleekburn to North Blyth	5.27	44%	N
AFR	WES	New	Coal ESI	Filton West Jn to Portbury Terminal Jn	19.63	90%	N
MTL1	SCO	New	Coal ESI	Thornton North Jn – COM	7.52	100%	Y
OXO	LNE	New	Coal ESI	Seymour Jn to Oxcroft Disposal Point	1.57	100%	Y
PBY	WES	New	Coal ESI	Parson Street Jn - Portbury	12.25	91%	N
PTA	WALES	New	Coal ESI	Cwmbargoed - Ystrad Mynach South Jn	14.50	95%	N
TYC	LNE	New	Coal ESI	Thoresby Colliery Jn - Thoresby Colliery	1.89	100%	Y
APL	KENT	Retained	Nuclear Fuel	Appledore – Lydd Town	15.00	95%	N
SIZ	ANGLIA	Retained	Nuclear Fuel	Saxmundham Jn to Sizewell	7.22	95%	N
SOT	LNE	Retained	Nuclear Fuel	Seaton Snook Jn – Hartlepool Power Station	2.13	100%	N
HUN	SCO	New	Nuclear Fuel	Hunterston - Hunterston Low Level	4.65	100%	Y
SAW	WES	New	Nuclear Fuel	Berkeley Road Jn - Sharpness	6.52	66%	N
SGS	LNW	New	Nuclear Fuel	Salthouse Jn - Port of Barrow	3.26	100%	Y
				Total	**246.56**		

Non coal ESI and spent nuclear fuel list

ELR	Route	Retained / New	Commodity	Line Name	Track km
GNT	WALES	New	Other	Gwaun-Cae-Gurwen - Pantyffynnon Jn	10.92
AGW	KENT	Retained	Other	Angerstein Jn to Angerstein Wharf	1.23
BGL2	WEST	Retained	Other	Yate South to Westerleigh	4.46
BRB	WEST	Retained	Other	Southall to Brentford Goods	4.56
BSC	EMIDS	Retained	Other	Corby North to Corby BSC & Network Rail Boundary	0.31
BSN	LNW	Retained	Other	Carlisle Yard Recess Sidings to Stainton Jn	1.67
BUX	LNW	Retained	Other	Buxton to Briggs Sidings	7.27
CJA1	SUSX	Retained	Other	Copyhold Jn to COM	0.93
CJA2	SUSX	Retained	Other	COM to Ardingly	1.41
CNB1	LNW	Retained	Other	Chinley North Jn to Peak Forest Jn	23.90
CNB2	LNW	Retained	Other	Peak Forest Jn to Buxton	0.56
CNB3	LNW	Retained	Other	Millers Dale Jn to Buxton Curve Jn	5.99
COS1	SCO	Retained	Other	Garriongill Jn to COM	1.89
COS2	SCO	Retained	Other	COM to Coltness	0.18
CPH	SCO	Retained	Other	Craigentinny Jn – NR boundary	3.18
CRE	SCO	Retained	Other	Westfield to Redford Jn	6.92
CWR	WEST	Retained	Other	Turnchapel Branch Jn to Cattewater	1.57
ETC	LNW	Retained	Other	Stainton to Brunthill	1.29
FED	ANG	Retained	Other	Felixstowe Beach Jn to Port of Felixstowe	2.76
FNS2	WEST	Retained	Other	Frome North Jn to Ownership boundary	4.28
GJH	LNW	Retained	Other	Mossband Jn to NR boundary	4.39
GMC	LNW	Retained	Other	Woodley Jn to Bredbury Sidings	0.76
GMH	SCO	Retained	Other	Grangemouth Jn to NR boundary	8.85

ELR	Route	Retained / New	Commodity	Line Name	Track km
GOB	WAL	Retained	Other	Gulf Oil Branch Jn to Waterston, Gulf Oil Refinery	5.68
GRW	ANG	Retained	Other	Griffin Wharf Branch	1.54
HAG	WSX	Retained	Other	Hamworthy to Hamworthy Goods	1.79
HNO	LNW	Retained	Other	Hartford North Jn to Oakleigh Sidings	1.03
HUE	LNE	Retained	Other	Neville Hill West Jn to Hunslet East	1.08
JAW1	LNE	Retained	Other	Jarrow Branch	5.39
KIL2	LNE	Retained	Other	Killingholme to NR boundary (0m 00ch)	4.63
LOF	WEST	Retained	Other	Lostwithiel Jn to Carne Point, Fowey	6.54
LUD1	WSX	Retained	Other	Andover Jn to COM	2.29
LUD2	WSX	Retained	Other	COM to Ludgershall	9.33
MOB	WEST	Retained	Other	Newton Abbot East Jn to Heathfield	7.10
MTL2	SCO	Retained	Other	COM – Methil	1.33
OWW	LNW	Retained	Other	Stourbridge North Junction to Round Oak	14.85
POC1	LNE	Retained	Other	Billingham-on-Tees to Seal Sands Storage	6.78
PYE1	LNE	Retained	Other	COM to Humber Road Jn	4.12
PYE2	LNE	Retained	Other	ABP boundary to COM	7.10
RHD1 & 2	SCO	Retained	Other	Rosyth Dockyard to Inverkeithing South Jn	1.99
RIC1	SCO	Retained	Other	Kaypark Jn to Bellfield	1.73
SCN	LNW	Retained	Other	Eccles to Weaste	1.34
SCR	LNW	Retained	Other	Garston to Speke	2.66
SDS	WEST	Retained	Other	Burngullow Jn to Parkandillack	8.57
SOY	WSX	Retained	Other	Northam Jn to Canute Road	1.31
SSK1	LNE	Retained	Other	Saltburn West Jn to Boulby Potash Mine	11.75
STA	WEST	Retained	Other	West Drayton to Colnbrook	4.21
THN	ANG	Retained	Other	Thames Haven Jn to Thames Haven	6.46
THO	WEST	Retained	Other	Yate Middle Jn to Tytherington	10.11

ELR	Route	Retained / New	Commodity	Line Name	Track km
TJC3	LNE	Retained	Other	Oakenshaw S Jn to Monk Bretton	9.80
TTF	WSX	Retained	Other	Totton to Fawley	13.79
WC1	LNE	Retained	Other	ICI Wilton Jn to ICI Wilton Coal Terminal	1.67
WRO	SCO	Retained	Other	Kittybrewster GF to Waterloo Goods	2.74
ARD	WEST	New	Other	Alphington Road Goods Branch	0.89
BDO	WAL	New	Other	Barry Docks Line Jn to NR boundary	1.45
BJR	WAL	New	Other	Machen Quarry to former Bassaleg Jn	7.83
BNC	WAL	New	Other	Hereford/Brecon Curve GF to Brecon Curve Jn	0.18
BOC1	LNE	New	Other	Seymour JN to former Markham Colliery Jn	0.93
BPH	LNW	New	Other	Hardingstone LC to Northampton South Jn	2.37
BTJ	LNE	New	Other	Shepcote Lane East Jn to Tinsley	0.97
CND1	SCO	New	Other	Cardonald Jn to Cardonald North Jn	0.72
CND2	SCO	New	Other	Cardonald North Jn to Deanside	2.05
ERB	WAL	New	Other	Herbrandston Jn to Robeston	1.79
FEP	LNE	New	Other	Pelaw Jn to Wardley	1.71
FOR	WAL	New	Other	Ford Siding GF To Ford Works, Waterton	1.83
FRY	WEST	New	Other	Friary Jn to Plymouth Friary	1.21
HCM	LNW	New	Other	Silverdale to Madeley	7.78
HNB	LNE	New	Other	Ryhope Grange to Hendon	2.68
HNL	WAL	New	Other	Brecon Curve Jn to MEB Siding	0.68
HTG	KENT	New	Other	Hoo Jn to Grain	17.76
LOO	WEST	New	Other	Coombe (Excl) to Moorswater	0.74
MIT	ANG	New	Other	Kings Lynn Jn to Middleton Towers	5.31
MWN	LNE	New	Other	Marsh Jn West to ABP Boundaries	2.21
NOP	LNE	New	Other	Scunthorpe Trent Jn to Roxby	5.97
OVE	WAL	New	Other	Margam Yard Jn to Port Talbot Docks	1.87
RIC2	SCO	New	Other	Bellfield to Riccarton	0.54

ELR	Route	Retained / New	Commodity	Line Name	Track km
ROA	WAL	New	Other	COM to 4m 01ch	0.42
ROC	WAL	New	Other	Pengam Jn to COM	1.65
SKS1	LNW	New	Other	Skipton Middle Jn to former Embsay Jn	0.99
SKS2	LNW	New	Other	Former Embsay Jn to NR boundary	10.66
STD	WEST	New	Other	Honeybourne to Long Marston	5.75
TFN	ANG	New	Other	Trimley to NR boundary	0.36
THA	WEST	New	Other	Kennington Jn to Morris Cowley	4.83
VON	WAL	New	Other	Neath and Brecon Jn to Burrows Sidings	8.23
WVL	WAL	New	Other	Former Bassaleg Jn to Park Jn	1.51
				Total	**361.87**