Assessment of AN's GPRS Submission

B&H Strategic Services Pty Ltd

Assessment of AN GPRS Submission Final.docx

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Executive Summary

Aurizon Network has made a submission to the Queensland Competition Authority (QCA) in accordance with legislation for its Access Undertaking, UT4.

The Submission relates to the provision of services in the second half of 2016, and is therefore a retrospective application for revenue of approximately $1.3m.

The service consisted of a survey using Ground Penetrating Radar technology by a consultant for Aurizon Network (AN). A track vehicle was supplied by AN for the consultant to mount their own equipment. The consultant was procured through a tender. The results of the service consist of a report on the condition of ballast and formation and which was subsequently used or could be used to guide the work of AN's ballast undercutting and cleaning operations.

This assessment has found that while the theoretical basis for the service is sound and applied in other railways to some degree, AN has not been able to provide a business case for the work and the method of procurement is irregular and would not provide best value for money.

In supplying machines, AN expended a large sum on depreciated equipment requiring a high level of maintenance and which was never designed for this type of work. It is estimated, the strategy to supply hitherto "spare machines" for the work has cost AN approximately $400,000 more than a suitable and alternative vehicle.

Further, in tendering the work, AN's self-imposed timeframe [redacted] AN has foregone the competitive tension that would otherwise be available if a planned procedure had taken place. The result of the rushed tender process is that the costs are inefficient.

In scoping the work to be performed, AN has provided little evidence to suggest what volume of work was required in the survey, structuring the work so as "*to capture as much of those [risky] sections (as possible)*[1]" within a budget. The scoping of work has therefore been assessed as imprudent.

Part of the cost identified included internal AN labour resources. The costing for these has been made with incorrect methodology, producing double counting and over-estimation.

Overall, it is estimated that with appropriate vehicle acquisition and a properly staged and timed tender, together with prudent labour cost reporting, AN could have performed the work for 30% less cost, if the work was justified at all.

In being ill-defined and without business case the survey work appears to be speculative experimentation of the R&D type. However, since this type of work was started in 2000[2] the period of speculation should have been over and the business case more transparent. While indicating that prioritisation of work was employed, in fact most of the network was surveyed and with very high cost of data analysis.

An efficient cost of providing this service and a framework for future assessment is included.

[1] AN response to the RFI question "How was the scope of work in terms of the number of kilometres or sites for the GPR investigation determined?".

[2] "*Aurizon has engaged various external organisations to perform GPR testing on the CQCN since approximately 2000*", The Report section 1 Background

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1 Background

In September 2017, AN submitted an application for Revenue Adjustment[3].

AN provided a report "GPR 2016 project – Phase 2 - Civil and Electrical Engineering Close-out Report, 12 May 2017" (The Report), to support the application for revenue adjustment for work associated with a Ground Penetrating Radar survey which had occurred in late 2016.

AN had gone to 4 possible candidate consultants to perform this work. According to AN "*The timeframes were RFP issued on 25th July 2016 and due date of 4th August 2016 (later extended due to requests from Tenderers to 8th August 2016)*[4]". The successful tenderer, of which there was only one compliant tender from the incumbent "*were awarded a standing offer contract with Aurizon for GPR testing on the CQCN for 4 years from 13 September 2016".*[5]

AN was to supply the vehicle upon which the consultant would mount their own equipment. An evaluation of vehicle types had been conducted and a Dynamic Track Stabilizer was chosen primarily because it could operate at 80 kmph instead of a hi-rail truck at 60 kmph. The scope of the work was "*The focus was two-fold, firstly to capture the higher risk sections of our Network (i.e. mainline track with higher speeds) and secondly, to capture as much of those sections (as possible) which are prone to higher levels of fouling (balloon loops).*"[6]

The work was performed during September to December 2016 including the analysis of the recordings made by the GPR equipment. This process is projected to be repeated every 2 years with the objective "*GPR test results are a form of track condition information that can be used for planning of ballast cleaning and other track maintenance activities*"[7].

[3] Aurizon Network's 2016 Access Undertaking FY2017 Revenue Adjustment Amounts - Explanatory Memorandum 26 September 2017

[4] Response to RFI questions 5 & 6, which were not answered with any requested information but which answer contained this information

[5] Executive Summary, The Report

[6] RFI response to question 1 "How was the scope of work in terms of the number of kilometres or sites for the GPR investigation determined?"

[7] Executive Summary, The Report

2 Request for Information

A Request for Information was issued to AN on the 7th November 2017 and response received on 20th November 2017 in the form of a spreadsheet with the question ("description") and answer ("Network response"). A second RFI was issued and which responses were received on 30th November 2017.

The RFI was issued because it was not clear from The Report exactly what tendering process occurred and whether a business case supported the expenditure. AN's rapid turnaround was nevertheless longer than anticipated by QCA since the information asked for should have been readily available, especially since The Report was compiled in May 2017 and the questions were specifically targeted for ease of response from easily available information.

In their responses, included in Section 3 of this report, AN was able to provide some quantified responses but generally gave descriptions of the process. Some answers were missing entirely.

The second RFI revealed information about the actual contractor costs and work content. As well, it is revealed that two dynamic track stabilizer machines were used, the first reference to two machines working. In The Report "*A dynamic track stabiliser (DTS) track machine had been used previously for GPR data capture on the CQCN, and was selected*". However the invoice from Under Pressure Hydraulics" indicates to MMC009 & MMC010, both DTS machines. It is unclear, but not material, as to whether or why two machines were used since the DTS is such a large machine that there is a great deal of room to mount equipment. The lack of size was not revealed as an issue in considering a hi-rail vehicle in the choice of appropriate vehicle.

3 Analysis of RFI Responses

We have made comment on the responses made by AN in spreadsheet form and shown in Appendix A.

3.1 Prudency

In regard to the prudency of the expenditure, AN indicates that as much work as possible was attempted, presumably within a pre-defined timeline or budget, and that the work would focus on higher risk areas[8]. The method of categorising or ranking the risk is alluded to as being on higher speed areas of the network and balloon loops.

One would not need to conduct GPRS on balloon loops to know that they are highly fouled through the deposition of coal "hung-up" from dumping operations and to which AN has consistently failed to prevent by way of simple solutions. The use of GPRS is hitherto unexplained for these areas.

For other areas of the network we are surprised that AN would not use track recording car measurements or the frequency of return of resurfacing as methods to identify risk areas. Indeed, based on these methods it may not be necessary to conduct expensive GPRS surveys but theoretically, any extra data may be of use.

Based on the evidence presented, the imprecise methods for scoping the work and the unconstrained extent of the work, our assessment is that the work has not been prudent.

3.2 Efficiency

AN has embarked on a process which has had advanced planning and a commitment to carry on a program first started in 2000 with experimentation and then from 2009 in a regular pattern. The amount of work carried out in refurbishment and/or maintenance signifies a well planned intention to use a machine for the work so that a contractor/consultant can mount their own equipment to perform the work.

While indicating that discussion and pre-analysis had resulted in prioritised work, in fact a large portion of the network was surveyed and analysed. After a decade of surveys, ballast depth was again measured and analysed across 2,137 kms. The data analysis of ballast depth alone consumed [redacted] of external contract and it is surprising AN needed to know such detail presumably for at least a second time. It is more understandable that AN would contract[redacted] (as it did) for analysis of ballast fouling levels, since this parameter changes with time, unlike ballast depth which varies minimally over such a large distance.

3.2.1 External Contract Portion

The external contract portion of the expenditure is approximately 60% of the total expenditure and therefore forms a significant part of the consideration for efficiency. On the face of it there was no need to rush a contract for the supply of GRPS but this is what appears to have occurred starting with a 7 to 10 day tender period for over a million dollars worth of work and a rapid deployment to which other contractors could not respond.

[8] RFI response: "firstly to capture the higher risk sections of our Network (i.e. mainline track with higher speeds) and secondly, to capture as much of those sections (as possible) which are prone to higher levels of fouling (balloon loops)"

The work is clearly complex involving field work elements of "ballast fouling levels", "ballast depth", "ballast screenability", "ballast profile", and "trackbed windowless sampling (TWS)" and data processing for each element. A 10 day tender period is insufficient for work of such complexity for reasonable responses from tenderers other than the incumbent.

[redacted]

The lack of competitive tension, which could have been generated given an appropriate timeframe of the process, would have resulted in better pricing.

[redacted]

The field work, although amounting to an external cost (contract) of approximately [redacted] was the minor portion compared with the data analysis costing [redacted] Obvious questions arise as to whether the entire 2,137 kms needed to be analysed since AN had carefully selected the scope according to their RFI response as: "*The scope was prioritised on a Mainline vs Yard/ Balloon Loops (Linespeed and Usage). The focus was two-fold, firstly to capture the higher risk sections of our Network (i.e. mainline track with higher speeds) and secondly, to capture as much of those sections (as possible) which are prone to higher levels of fouling (balloon loops)*". Indeed, a very large part of the network was captured and the data analysis was especially costly.

3.2.2 Internal Costs

The other portion of the expenditure was internal labour and parts ("components").

[redacted] was expended to "maintain" the Dynamic Track Stabilizer upon which the consultant would mount their own equipment. The amount of money for 80 shifts operation of the machine is so large that it is most likely part refurbishment and part operational maintenance. This detail is not shown in the response to the RFI.

The choice of Dynamic Track Stabilizer compared to other vehicles was based on a requirement that the vehicle travel at 80 kmph in order to minimise the occupation of train paths. This is irregular because the average speed of coal trains is well below 80 kmph and the torque of hydraulically powered traction machines like the Stabilizer falls rapidly with speed. Being a track vehicle it is significantly constrained in its movements. In any case, a significant amount of the network surveyed is not suitable for 80 kmph operation.

The Dynamic Track Stabilizer attracted Plant Costs of [redacted] per day comprising "maintenance" as well as depreciation of [redacted] for 80 shifts. This implies a depreciation of [redacted], for an implied capital cost of [redacted] for a 10 year life. It is unclear, but not material, as to whether the depreciation cost of [redacted] is applicable for 12 months, 2 year (between GPRS) and whether there is other work the vehicle could perform during that time, except that it is clear that the costs have been applied to this work.

The two DTS machines in AN's possession were purchased in 2000 and 2003 respectively and the fair written down value attributed to MMC010 in AN's asset register is approximately [redacted] and to MMC008 is [redacted].

Whichever calculation is chosen for the appropriate depreciation of the machine it is grossly over-estimated for the short amount of time it is used for this work.

An anomaly in the response of AN is that the charge levied for the work comes from 15 days' work indicating that while the machine's time allocated to this task is 80 days for depreciation purposes, the actual time of use amounts to 15 days.

A hi-rail truck was dismissed as an alternative because it could only travel at 60 kmph, more than enough to minimise train paths. A hi-rail could remove itself from the railway in order to avoid coal train conflict and could provide transport to and from the worksite in a much more flexible way than the Stabilizer. We estimate a suitable truck could be procured for $80,000, be more reliable than a track machine, provide flexibility for transport and be used more effectively over the next 24 months prior to the next GPRS operation.

The proportion of AN labour costs amounts to approximately [redacted][9] or [redacted] of the total expenditure. [redacted] in labour costs were associated with machine "maintenance"[10].

A calculation work-up was provided by AN in response to the RFI which gave some detail of the costs of personnel in the BCD Operations area, some of whom were involved in the work. This data does not appear to include the maintenance personnel.

There are a number of anomalies in that calculation. Leave entitlements have been calculated on the basis of 9.5 hour days[11]. Prior to the addition of overheads, each of the 27 staff in BCD Operations cost on average [redacted] The overhead proportion amounts to [redacted] of the total cost or [redacted] of BCD Operations. These calculations point to consulting type accounts and/or double counting of on-costs and overheads, or inappropriate calculations. Overheads and other components will already have been allotted in AN's UT4 allowances.

Other detail[12] shows the inclusion of "CORPORATE MEMBERSHIPS & SUBSCRIPTIONS" and typical "charge out" rates of [redacted] indicating corporate overheads and on-costs.

This project appears to have been a pool for the absorption of large amounts of what would normally be surplus labour or at least operating as a profit making consultancy. This could be understandable in view of alternative methods of procuring the necessary resources such as with outsourcing if there had been better scoping of the work or business case.

[9] AN's "GPR costs.xls"
[10] AN's "GPR Plant and Labour Rates _QCA.xlsx" in response to RFI
[11] Leave, workers compensation, payroll tax and other components are calculated on the basis of normal hours, generally 7.5 to 8 hours per day.
[12] AN's "GPR costs.xls"

3.3 Business Case

There exists ample theory to support an investigation of the benefits that could be derived from GPRS. Indeed, AN have been doing this type of work since 2000. A scan of this technology suggests does not yet have mature application in the railway industry as a whole but given AN's relatively long term experience with it indicates AN is probably at the forefront of its use worldwide. There must be considerable confidence in AN of its benefits.

Yet however there is no evidence from AN to support this finding. Despite the ample opportunity to provide evidence or estimates of its benefits there is nothing that may support an expenditure of $1.3m in this revenue adjustment application. Nor is there any evidence in the UT5 submission that might lead one to believe that the GRPS program is now paying dividends. There is no comparison of "do nothing" versus "GPRS" or projections of benefit.

4 Bottom Up Estimate of Efficient Costs

In a scenario assuming a business case could support expenditure on this activity a hypothetical bottom up case is developed from very simple assumptions as to whether the work could be done more efficiently. The following assumptions are made:

- Competitive tension in contractors results in a 20% reduction in prices for the work[13]. This assumes that sufficient time is available for an Australian based contractor to gain the experience and technology. This could be by way of licenses from the existing contractor. An Australian based contractor would help minimise the travel costs of the UK based consultant and have closer on-going ties.
- A hi-rail truck is utilised, reducing the "maintenance" and acquisition of a vehicle to approximately $80,000 capex and $20,000 maintenance and equipment fitting cost on the vehicle for the exercise. The vehicle is used in other duties for the remainder of the 2 year period. The capital cost is $80,000 of which an accelerated (straight line) depreciation amount is applicable, due to its work in off-road situations, over 5 years. An considered the possibility of using a hi-rail.
- The operation of the hi-rail requires an AN driver/engineer, safety officer, AN engineer and consultant to operate the sophisticated technology, 3 AN staff.
- The field work is performed in 15 days, 10 hours working time per day
- Pre-planning for the work, administration and post analysis following the contractor's report, by AN personnel amounts to 3 man-months of normal time (8 hours).
- The applicable labour rate for AN staff is $150 per hour which includes on-costs.
- Sundry accommodation and consumables for AN staff amounts to 10% of other AN costs.

These assumptions lead to a total cost for the work of approximately $870,000.

[13] Competitive tendering and contracting in the Australian public sector
http://www.uq.edu.au/economics/johnquiggin/JournalArticles96/CTC96.pdf

5 Future Assessment Framework

Out of necessity, this assessment has been based on unstructured and incomplete information, supplied primarily from AN. A better alternative would be for AN to provide information for their revenue adjustment that could be assessed based on objective data and benchmarks, the majority of it being their own. The elements of a framework are described in this section and can be subject to an iterative process with AN so that a smooth assessment can be made in the future and which does not hold up suitable adjustments.

5.1 Business Case

Any expenditure for any purpose requires a business case. That is, a reason for expenditure. The business case needs to be appropriate for the level of expenditure, so for relatively small expenditures the case needs to bring out only major salient points. The minimum requirements are:

- A qualitative description of the reason for the expenditure.
- An estimate of the benefits arising, comparing “do nothing” and alternative methods in quantifiable terms
- The benefit to expenditure comparison in quantifiable terms
- Where benefits may not be known, an estimate in quantifiable terms so that the next assessment can use the benchmark for refinement in the next iteration
- If R&D in nature, a projection of the benefits for similar undertakings in the rail industry or in other industries. The benchmark can then be used iteratively in the next assessment
- Outcomes, benefits and costs, from previous work and future plans

These estimates and projections do not have to be exhaustive for small expenditures but do need to be documented so that lessons can be learned and refinements applied.

5.2 Prudency of Scope

Scope is largely dependent by the maturity of the process for which the expenditure is required. For R&D the scope is less certain than for regular expenditure for known outcomes. Nevertheless, the scope needs to drive the quantum of expenditure rather than a budget driving the scope, since scope will determine the likely benefits of the expenditure. The minimum requirements for scope are:

- Description of the work activity
- Quantitative measure of the extent of the proposed work
- Variations in the quantitative measure that may be needed due to variations in site conditions and contract arrangements
- The use of previous quantitative measures on scope or the estimate for future iterations to refine the scope
- Outcomes from previous work and future plans

5.3 Efficiency of Activity

The QCA has various tests that are applied for assessing efficiency in any expenditure, Capex, opex or other expenditure such as GPRS. For the GPRS work the application of those tests involves as a minimum:

- Identification of alternative solutions to the problem and a comparative analysis of those solutions leading to accurate scoping
- The use of resource costs that are not already allocated to other cost allowances
- Application of the appropriate personnel skill level, appropriate equipment and contract resources
- Transparent and applicable tendering and contracting process where external resources are required
- Due diligence in applying the appropriate quantum of resources, internal and external
- Comparative efficiency with other similar activities in the rail industry or from industry generally

Again, the extent to which detail is required for these points is proportionate to the level of expenditure, but for “first time” application it would be prudent to provide quantifiable data so that iterations can occur more smoothly with later applications.

Appendix A - RFI Questions and Responses (AN's response with added B&H comment)

RFI #	Name	Description	Network response	B&H comment
1	GPRS	How was the scope of work in terms of the number of kilometres or sites for the GPR investigation determined?	Scope of works was determined through discussions and workshops with Aurizon Network Civil Engineering, Design Management and Asset Management. The scope was prioritised on a Mainline vs Yard/ Balloon Loops (Linespeed and Usage). The focus was two-fold, firstly to capture the higher risk sections of our Network (i.e. mainline track with higher speeds) and secondly, to capture as much of those sections (as possible) which are prone to higher levels of fouling (balloon loops).	The number of kilometres have not been identified in the answer or the reason for the number of kilometres. The determination of scope appears not to have been decided on the basis of other quantifiable parameters and readily available data such as return frequency of resurfacing or speed restrictions.
2	GPRS	1. On what basis were the four tenderers chosen: identify for each tenderer and one or more than one reason for each. a. They had previously performed the same type of GPR railway work at AN b. They had GPR equipment that would fit onto the AN equipment c. They had publicity or references that indicated that they did the specific type of GPR railway work d. They had publicity that indicated that they did work involving GPR, but not specifically railway application e. They were a general Geotech company f. Other (please specify)	Four proponents were sought for Expressions of Interest [redacted] The Tender Assessments were based on:- 1) previous experience in a railway environment, 2) ability and capability to ensure GPR metrics reflect the type of fouling on the CQCN 3) ability to deliver within the timeframe	[redacted]
3	GPRS	2. Did AN establish that each of the (short list of) tenderers had a high probability of responding prior to going to the effort of sending them a tender?	Throughout the preceding months leading AN had ongoing discussions with the various companies.	If they had had discussion they would have known that only one company was able to respond in the very short timeframe.
4	GPRS	3. What other international companies were considered for the work, if at all, as possibly being on a long list before it was (shortened to) 4?	None	Others are available.
5	GPRS	4. What mobilisation time was the tenderer asked to comply, from award to full on-site mobilisation?	RFP Stage was to conclude on the 4th August 2016 (later extended to 8th August 2016) and Completion date for data capture and delivery of processed and verified data (with only GPS coordinates as a reference) by 30th November 2016.	According to the AN Phase 2 Close Out Report "In mid-2016, Civil Assets requested Civil and Electrical Engineering". The mobilisation time for a contractor was therefore in the order of 2 months, at most. The answer provided by AN does not address the question which is very specific
6	GPRS	5. What was the exact wording of the response from each chosen company, either to indicate they could or could not proceed with the tender?	All of the tenders responded, 3 of the 4 tenderer's advised that they were unable to meet to timeframes required and did not submit a compliant bid. The timeframes were RFP issued on 25th July 2016 and due date of 4th August 2016 (later extended due to requests from Tenderers to 8th August 2016).	Question not answered. Tenderers were given 10 working days to respond to the tender for a multi-million dollar piece of work. In addition the Tenderers' responses, which ultimately were non-compliant and needed to be hurriedly put together.
7	GPRS	6. Did any tenderer fail to respond at all?		The AN Phase 2 Close Out Report states "Only 1 of these organisations, Zetica, submitted a tender for these works". This is now know to be incorrect. Three of the 4 submitted non-compliant tenders which indicates that the tender requirements were unrealistic or the tenderers chosen were incompetent.
8	GPRS	7. Did AN try to contact a tenderer that did not respond?	No	Competition for AN not particularly important

RFI #	Name	Description	Network response	B&H comment
9	GPRS	8. Did AN ask tenderers to acknowledge receipt of tender documents?	TBC	
10	GPRS	9. What were the perceived benefits of performing the work?	Ballast contamination occurs where voids between the ballast are fouled by (among other things):- coal particles (spills and coal dust); ballast particles (fines, which occur as extreme forces cause the ballast rock to interlock and grind together); wind-blown sand; and - dirt / mud particles migrating upwards from the formation. Healthy ballast is essential for ensuring track has adequate drainage and can absorb (and disperse) the extreme forces that are applied to the sleepers through the passage of coal trains. The level of ballast contamination, and the rate at which it increases, cannot be identified with the naked eye. The only clear visual evidence of ballast deterioration occurs where mudholes form after significant rainfall, [by which point track may already be structurally weakened]. Historically, the mainline ballast undercutting scope was determined through a manual, labour-intensive task, which involved testing samples from [manually excavated] spots identified by asset engineers. However, ballast depth is not uniform across the CQCN, nor is the rate at which ballast contamination occurs (e.g. contamination rates tend to be more rapid at loading/unloading points around the network). As a consequence, the manual sampling methodology did not provide a complete and comprehensive view of ballast fouling across the 2,670km of the CQCN. The data complied through Ground Penetrating Radar (GPR) provides this comprehensive view. Analogous to an x-ray, GPR allows Aurizon Network to understand what's happening beneath the surface, without the need for extensive (and invasive) manual excavation. GPR is essential for ensuring that the scope and location of the mainline ballast undercutting program can be targeted and prioritised with a much higher degree of accuracy, based on quantifiable, data driven evidence. In addition to the accuracy/planning benefits specified above, GPR is materially more efficient as a data collection process. It requires less manual/on-site intervention, which has consequential benefits in terms of network operational efficiency. Spending less time on track improves network availability for Aurizon Network's customers.	No quantified benefits stated - no business case
11	GPRS	10. What savings in cost to other AN programs of work such as ballast cleaning and resurfacing, or improvements in the quality of service provided to AN clients did AN foreshadow as resulting from this work? What was the business case for the work?	***Ballast Cleaning*** - improved ability to ensure ballast undercutting is targeted; provision of a dataset that enables an improved ability to become increasingly predictive in terms of maintenance activities which greatly reduces reactive work and the subsequent loss of revenue train paths. Improved ability to demonstrate the extent of fouling in the CQCN and understand what the fouling severity and extent is to localised hot spots such as bridges, neutral sections, wayside installations, turnouts and level crossings. ***Resurfacing*** - ballast fouling is directly responsible for track geometry degradation. Accelerated track geometry degradation, to the point where geometry parameters reach or exceed safe limits can be a key contributor to derailments. Temporary speed restrictions across sections of track suffering from deteriorating track geometry is a rail infrastructure managers	No quantification provided - no business case

RFI #	Name	Description	Network response	B&H comment
			means to temporarily reduce the rate of degradation and mitigate risk. Impacts due to poor geometry from heavy revenue trains have the effect of further accelerating geometry degradation and through attrition and fatigue reduce the useful life of track components, including rail, fasteners, sleepers, ballast and underlying formation. Resurfacing is the only autonomous, mechanised means to correct and/or improve deteriorating track geometry. In summary, ensuring ballast fouling is appropriately managed reduces the extent of resurfacing required and helps enables predictive, planned resurfacing activities which can be better planned to ensure revenue trains paths can be maximised; conversely, reactive resurfacing reduces revenue train paths whilst longer standing temporary speed restrictions removes reduces network capacity, revenue train paths and increases crewing requirements for pit-to-port-to-pit cycles.	
12	GPRS	11. What benefits had accrued from earlier works in earlier years of this kind?	As above, earlier revisions of GPR (albeit somewhat reduced in terms of the lengths of track captured within the CQCN) were utilised to develop targeted ballast undercutting scope for current and future periods. Further, earlier years of GPR still provides a dataset that provides a data snapshot at a point in time that will contribute to an understanding of fouling rates.	No quantification provided
13	GPRS	12. What were the components of the machine hire charge of [redacted] per day such as fuel, labour, ROA, and depreciation? How was this figure derived?	See attached file "GPR Plant and Labour Rates QCA". Plant rate is based on a build up of the charges to run the Stabiliser plant i.e. .components, labour (maintenance), consumables and depreciation divided by the expected shifts for the year	[redacted] was spent on parts and labour to make the stabiliser machine fit for the purpose and to maintain it for its work on the GPRS project. It could not have been only maintenance, it is very large. This amount should not be attributed solely to the 80 shifts used in the calculation of the [redacted] daily rate. The yearly depreciation of [redacted] has been applied to the 80 shifts. As the cost of components/parts and maintenance labour were so high, the machine had little if any residual value prior to the maintenance work performed on it. The total cost of [redacted] for 80 shifts work represents and under-utilisation of [redacted] and if the machine is not to be used for other work for another 2 years represents a greater under-utilisation. An alternative vehicular strategy would have been to purchase a suitable size hi-rail vehicle on which to mount the equipment. The requirement that a machine must be able to travel at 80 kmph to reduce train path requirement is disingenuous because the average speed of coal trains is well below 80 kmph, the dynamic track stabilizer is hydraulically driven and has low torque at higher speed thereby rarely being able to maintain 80 kmph speed. A hi-rail truck, whilst having a lower maximum speed would have better torque and flexibility such that if the work was to potentially interfere with coal trains, could remove itself from the track. This would also increase the flexibility of the workforce by providing transport to and from the most convenient location for start and finish of operations. It is also clear that the work was conceived well in advance of the tender

RFI #	Name	Description	Network response	B&H comment
				since the refurbishment and/or repair cost is of such magnitude that work would had to have been done well prior to the tender.
14	GPRS	13. What are the components of the charge [redacted] Please include base salary, annual leave, long service leave, payroll tax, workers compensation, shift penalty (if appropriate), overtime quantum (if appropriate) and any other component used to calculate the rate.	See attached file "GPR Plant and Labour Rates QCA". The labour rate is not built off one person. There is a budget for the entire BCD operational team that is made up of 27 employees of varying rates. This total budgeted labour is combined with labour consumables and overheads to give a total cost. The rate per hour is then calculated from the average hours per day for the 27 employees allowing for leave and utilisation.	The question has not been answered which was specific and points to a particular person and role. Leave has been accumulated on the basis of 9.5 hours/day which is not how leave is accumulated. Labour cost rate has included "overheads" in which certain elements are not variable, do not recognise 9.5 hours per day as the calculable rate, and include fixed elements of payroll tax, and workers compensation. The overall calculation has assumed a total variable rate which is false. Before applying overheads, each of the 27 staff attract a cost of [redacted], many elements of which will be fixed, not variable or covered subsequently in overheads. Double counting is evident.
33	GPRS	14. What were the individual components of the consultant fee of [redacted] fee incurred in March 2017 when the work was performed in September 2016?	Refer attached invoices for individual components. The work relating [redacted] was incurred in December 2016 (refer invoice). Processing is carried out after data is captured.	
34	GPRS	15. Was the consultant's contract a lump sum? What was the scope of work associated with the lump sum?	Refer close out report and attached invoices for Zetica	The response to RFI question indicates the scope and cost invoiced to AN, not the scope of work in the contract for the contract amount in the contract.
35	GPRS	16. If not a lump sum, what were the scopes of work for each of the schedule of rates?		A contract scope nor contract lump sum have been identified in these responses
36	GPRS	17. What were the reasons for the contract variations?	To produce an additional report summarising findings (refer attached invoice)	
37	GPRS	18. What was the reason for the Professional Services costing [redacted] labelled "GPR Labour"?	Refer attached invoice	The invoice does not provide a reason, simply the details of the expense. Two machines MMC010 and MMC009 are shown as needing support. These have not been previously identified and only one machine was mentioned in the close-out report. The invoice totals [redacted] and includes [redacted] for labour. As this was external service it is unclear, but not material, as to why it was accounted for as "GPR Labour" and not "contract" or suchlike.

RFI #	Name	Description	Network response	B&H comment
38	GPRS	19. Are any of the 40 AN employees incurring costs also part of maintenance teams or providing maintenance services that may already have been made allocations in the Access Undertaking budget?	The QCA Final Decision on UT4 stated the following regarding GPR costs on Page 161 "*There is uncertainty about the timing and costs of future GPR runs. Aurizon Network's submission acknowledged this by stating that the next GPR run would occur 'most likely' in 2016–17. Further, Aurizon Network has changed the number and cost of proposed GPR runs since its previous submissions. We therefore consider that these costs should be recovered through the revenue cap process, once costs and timing are known.*" Aurizon Networks original UT4 scope included an allowance for GPR costs. This was subsequently rejected and the QCA proposed to include it as part of the Rev Cap process. Therefore it is clear that GPR costs are not part of the UT4 scope. The UT4 costs is built up based on the scope and the labour hours required to deliver the scope. The hours and costs relating to the 40 employees relate to the GPR project as GPR didnt form part of the UT4 scope. In addition please find attached breakdown of employees. Based on the spreadsheet there are twenty-one employees which are company 5000 (Aurizon Network) employees that have been booked to the GPR run (total costs [redacted])however these people costs were not expected to be fully recovered in UT4, just their effort on specific maintenance activities. Note that employees under Company code 4000 are non Network employees and therefore not part of the UT4 allowance. Whilst Worksite is showing in Company 5000, at the time of UT4 submission Worksite Protection belonged to company 4000 and only transferred to Network in September 2017.	At the rates indicated, on-costs, overheads and corporate costs appear to be included on some personel. 40 employees are shown in the labour details from the earlier AN response.
39	GPRS	20. What is the actual km covered in the GPRS for FY17?	2137 Km as per Exec summary in Project Close out report already provided to QCA	Confirmed
40	GPRS	21. Could we have the Zetika invoices for FY 17?	Refer attached invoices	Confirmed, noted: Field work began 20th September 2017 "Establishment" (mobilisation) started 12th Sept 2017, [redacted] Elements of "ballast fouling levels", "ballast depth", "ballast screenability", "ballast profile", "trackbed windowless sampling (TWS)" were conducted. TWS (verification survey) conducted in Nov 17 with further "mobilisation" in Nov 2017. TWS sampling conducted over 4 days at a cost of [redacted] TWS report at cost of [redacted]". Data analysis total of [redacted] being the large single cost element of the work