AURIZON

Clotilde Bélanger
Program Manager
Queensland Competition Authority
Level 27, 145 Ann Street
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20 June 2018

Dear Clotilde,

Aurizon Network Pty Ltd (Aurizon Network) – FY2017 GPR Submission

On 26 September 2017 Aurizon Network submitted to the Queensland Competition Authority (**QCA**) its FY2017 Revenue Adjustment Amounts Submission (**FY2017 Revenue Cap Submission**) seeking a net recovery of $40.5 million from Access Holders, including $1.35m of costs associated with Ground Penetrating Radar (**GPR**) works.

The QCA engaged B&H Strategic Services to assess whether the costs attributable to the GPR works were prudently and efficiently incurred, and B&H Strategic Services recommended that approximately $400,000 of Aurizon Network's GPR costs be removed.

Aurizon Network revised the FY2017 Revenue Cap Submission as at 5 December 2017 to remove all costs associated with GPR works ($1.35m), in order to facilitate the timely approval of the remaining FY2017 Revenue Adjustment Amounts.

Aurizon Network has now reviewed all costs associated with the GPR works and addressed issues raised by B&H Strategic Services. The purpose of this submission is to provide further information in support of Aurizon Network's GPR cost proposal of $1.35m and seek the QCA's approval in line with clause 4.3(c) of Schedule F.

Aurizon Network will incorporate these costs within its FY18 Revenue Cap Submission, subject to the QCA's approval.

Aurizon Network welcomes the opportunity to discuss any queries that you may have, and can provide access to the relevant experts to discuss any of the points in this submission.

We have provided a version of this submission for publication along with a confidential version. The Appendix is confidential.

If you have any questions in relation to this correspondence, please do not hesitate to contact Jenna Cameron on 07 30191123 or via email Jenna.Cameron@Aurizon.com.au

Yours sincerely,

[redacted]

Donna Bowman
Manager Network Regulation (Access Undertaking)
Aurizon Network

FY17 GPR Submission

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Background

On 26 September 2017 Aurizon Network submitted to the Queensland Competition Authority (**QCA**) its FY2017 Revenue Adjustment Amounts Submission (**FY2017 Revenue Cap Submission**) seeking a net recovery of $40.5 million from Access Holders.

The Revenue Adjustment Amounts included $1.35 million of costs associated with Aurizon Network's Ground Penetrating Radar (**GPR**) works in accordance with clause 4.3(c) of Schedule F of Aurizon Network's 2016 Access Undertaking (**UT4**).

The QCA engaged B&H Strategic Services to assess whether the costs attributable to the GPR works were prudently and efficiently incurred. The Assessment of AN's GPRS Submission by B&H Strategic Services (**B&H Report**) concluded that the Aurizon Network's GPR costs were not efficiently incurred. B&H Strategic Services considers that *"… the work has cost AN approximately $400,000 more than a suitable and alternative vehicle…"*[1] and recommends that the QCA only approve the recovery of GPR costs to the value of $0.9m.

Aurizon Network revised the FY2017 Revenue Cap Submission as at 5 December 2017 to remove $1.35m costs associated with GPR works, in order to facilitate the timely approval of the remaining FY2017 Revenue Adjustment Amounts.

Aurizon Network has now reviewed all costs associated with the GPR works and detailed the revised submission of prudent and efficient costs, totalling $1.35m.

The purpose of this submission is to provide further information in support of Aurizon Network's GPR cost proposal of $1.35m, address issues raised in the B&H Report and seek the QCA's approval in line with clause 4.3(c) of Schedule F.

Aurizon Network will incorporate these costs within its FY18 Revenue Cap Submission, subject to the QCA's approval.

Further information in support of Aurizon Network's GPR costs

Vehicle Selection

The B&H Report outlined that Aurizon Network did not use the most suitable vehicle to complete the GPR survey. The report appears to conclude a hi-rail truck would have been a lower cost, more appropriate solution, than Aurizon Network's chosen option of fitting a steel frame to one of its existing Dynamic Track Stabiliser (**DTS**) machines for completion of the relevant work. The B&H Report stated: *"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"*[2], recommending a reduction of $400,000 and that the QCA only approve the recovery of GPR costs to the value of $0.90m.

Aurizon Network does not consider this conclusion is correct for the reasons stated below:

- Aurizon Network assessed the relevant strengths and weaknesses of a number of different rail-mounted vehicle types before ultimately choosing to proceed with the DTS machine, which had been used during all of its GPR data capture programs since 2011.

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[1] The B&H Report, page i.
[2] The B&H Report, page i.

- In Aurizon Network's experience, the most effective current method for GPR data capture on the Central Queensland Coal Network (**CQCN**) involves attaching GPR antennae to steel frames with these frames attached to a rail-mounted vehicle that can travel at 80km/h. The ancillary computing equipment and supporting power sources also reside within the rail-mounted vehicle, meaning that the vehicle must have significant space and weight carrying capacity.
- The DTS was primarily chosen because a DTS vehicle has the physical weight capacity and size to accommodate all the required personnel, equipment, steel frames, power source and various computers. In addition, Aurizon Network already had the steel frames and pre-existing certification and accreditation for their use with the DTS, and so did not need to incur any additional costs for redesign, manufacture and certification of appropriate modifications to a hi-rail truck.
- The DTS is able to supply all power required, without the need for an additional on-board generator or batteries, as would have been required for a hi-rail truck.
- The DTS also has the advantage that it is able to operate at the same maximum permitted speed as loaded coal trains (80km/h). This ultimately minimises any detrimental short-term impact on network throughput as a result of schedulers and train controllers needing to accommodate a vehicle incapable of reaching this maximum speed on the network.

Aurizon Network did consider alternatives, including:

- Railmotor - however, attaching frames to Aurizon's railmotor was considered inappropriate, as the railmotor is heritage listed and modifications are heavily restricted and governed. Any modification would have required a number of time consuming checks and approvals, at the end which there would still have been a risk of an unfavourable outcome (i.e. non-approval).

Accordingly, this option was rejected.

- Hi-rail Truck (as suggested the B&H Report) - however, it was considered not fit for purpose, because:
    - Aurizon's current fleet of hi-rail truck's, which are used to execute road patrol inspections and works in planned closures vehicles can only travel at 60km/h. Given that 80km/h is the maximum permitted speed for a loaded coal train, use of a vehicle capable of a maximum speed of 60km/h, during normal Network operations (i.e. outside a closure) would cause consequential and detrimental impacts on network throughput.
    - A hi-rail truck can travel at 60km/h however when performing work on the tracks (or inspections) it can only travel at 40km/h. Also, a hi-rail truck, when it is wet, is not to exceed 40km/h due to its breaking capacity.
    - A hi-rail truck requires three consecutive train slots when operating with coal trains operating at 80km/h (one for the hi-rail, one before and one after it), compared to the DTS at 80km/h (only requiring one slot). Getting access to track sections when three consecutive slots are available is expected to significantly reduce overall average GPR data capture travel speed (<60k/h) resulting in a much longer duration to complete data capture works.
    - Its use would have required new steel frames to be designed, manufactured and certified by a Registered Professional Engineer of Queensland (**RPEQ**) with associated time, cost and risk of non-approval.
    - Attaching the steel frames to the hi-rail truck would have require additional accreditation of the hi-rail truck for use on rail and road, with associated time, cost and risk of non-approval.
    - A hi-rail truck would require on-board batteries or generator power to power the GPR and ancillary equipment, all of which require additional space and inherent engineering; by contrast the DTS machine can already supply sufficient power for the required equipment.

- Also, if Aurizon Network were to work with a hi-rail truck provided by a contractor, the local regions would need to provide a Cat 3 Operator to assist safe operations across the Network whilst on track. This takes away precious resources from the local teams and they may not always be able to provide this support. Whereas the DTS has its own qualified operators.

Accordingly, this option to use a hi-rail truck was also rejected.

The B&H Report did not outline the breakdown of their cost assumption nor operational assumptions in relation to the cost of use of a hi-rail truck, but concluded (without supporting evidence, cost assumptions or calculations) that a suitable truck could have been procured for $80,000. The cost assumptions need to account for a number of factors such as:

- The design, manufacture and re-engineering costs to transform the hi-rail truck into a fit-for-purpose rail-mounted truck.
- The design and manufacture of new steel frames to fit the GPR antennae.
- The future maintenance costs of a suitable procured hi-rail truck.
- The RPEQ certification and other accreditation costs.
- The winning contractor, [redacted], charge daily rates for personnel and equipment. Therefore, the longer personnel and equipment are capturing data, the higher the total corresponding charge. [redacted] daily charge was [redacted]
- Use of the hi-rail truck during the GPR project is expected to have extended the date of completion of data capture, due to additional time to:
    a. Design, manufacture, certify and fit a new frame to a hi-rail (~6 weeks)
    b. Complete data capture (extra duration of ~13 days)

These assumptions were not clearly identified in the B&H Report. Aurizon Network's estimate is that this additional time a hi-rail truck would have taken to complete the GPR survey versus a DTS machine would have increased costs by approximately $66,431.

A comparison of estimated data capture costs with each vehicle is included in the following table:

ITEM	UNITS	EQUIPMENT					
		DTS			HI-RAIL		
		QTY	RATE	COST	QTY	RATE	COST
VEHICLE AND OPERATOR, SUPPORT VEHICLE, ACCOMMODATION	Day	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted] EQUIPMENT AND OPERATOR	Day	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
ENGINEERING CO-ORDINATION (2 hours per day)	Day	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
			TOTAL	[redacted]			[redacted]

Therefore, confirming the decision not to use a hi-rail truck verses a DTS machine would not have been feasible.

The B&H Report also stated:

> *"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."*[3]

The speed issue, as explained above, while significant, was not the only factor considered when determining if a hi-rail truck would be a suitable option. Another important factor considered was level crossing accessibility and suitability for a hi-rail truck within the CQCN.

It is important to understand that a hi-rail truck cannot simply remove itself from a particular train path at any time to avoid train conflict because a hi-rail truck can only on-rail and off-rail at specific, identified and risk-assessed locations. These locations are confined to open level crossings, however there are multiple level crossings that are not suitable for on-railing or off-railing of a hi-rail truck due to the restricted mobility, size and type of a hi-rail truck that would be required to accommodate necessary GPR equipment and personnel. An open level crossing would be the most suitable for a hi-rail truck to on-rail and off-rail due to the width (~15 - 20m wide). It is important to understand that with a hi-rail truck the most complicated task is on-railing, as this requires multiple manoeuvres to safely on-rail onto the CQCN. There are safety implications involved with the hi-rail truck on-railing and off-railing at an open level crossing because level crossings are accessible to the general public and the boom gates is required to be lowered for protection (to the general public). The lowering of the boom gate and the excess maneuverers would result in a substantial delay to the GPR works, which incurs additional daily charges. The hi-rail truck is not as flexible as a DTS machine, with regards to mobility. For example, between Rockhampton and Emerald there are only three open level crossings suitable for a hi-rail truck to on-rail and off-rail.

Please refer to **Attachment A**, for example photographs of what a suitable level crossing looks like versus unsuitable level crossings, in terms of fit for purpose for a hi-rail truck to on-rail and off-rail. A suitable example of a level crossing (~15m wide) that is sufficient for a hi-rail truck is deemed suitable mainly because of the width. A hi-rail truck also requires a good, robust road surface for on-railing and off-railing and as such suitable open level crossings are few and far between. Also within **Attachment A** are photographs of GPR equipment fitted onto a DTS, to assist with understanding the housing requirements for equipment.

By comparison, a DTS is an on-track machine and travels across the CQCN safely and reliably on a regular basis at 80km/h which results in less delays and less cost as [redacted] charge daily rates for personnel and equipment. Therefore, the longer personnel and equipment are capturing data, the higher the total corresponding charge. This was a primary consideration in the decision to use the DTS rather than a hi-rail truck for the GPR works.

A close-out report, 'GPR 2016 project – Phase 2 - Civil and Electrical Engineering Close-out Report', explains the analysis undertaken when planning the GPR works. The report outlined;

> *"The most effective current method for GPR data capture on the CQCN involves attaching GPR equipment to frames, with these frames attached to a rail vehicle that can travel at 80km/h. Data capture at this speed allows a rail vehicle to operate at the same maximum speed as coal trains, therefore only occupying 1 train slot. A railmotor was assessed for this project, however attaching frames to this vehicle was considered to be unacceptable from a rollingstock*

[3] The B&H Report, page 5 of 14.

modification viewpoint. A hi-rail truck was assessed, however could only travel at 60km/h. A dynamic track stabiliser (DTS) track machine had been used previously for GPR data capture on the CQCN, and was selected."[4]

Therefore, it is evident that a hi-rail truck would not have provided more flexibility as the B&H Report suggested; given a hi-rail truck suitable for housing the GPR equipment and personnel would not have been the safest or easiest option due to on-railing and off-railing throughout the CQCN.

Page 3 of the 'GPR 2016 project – Phase 2 - Civil and Electrical Engineering Close-out Report' discussing the GPR capture methods is available in **Attachment B**.

Use of Two DTS Machines

The B&H Report stated;

> *"…the invoice from* [redacted] *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."*[5]

To clarify, two DTS machines (MMC009 & MMC010) were indeed used throughout the GPR works. Due to an unforeseen breakdown of the initial DTS machine which required a hydraulic pump replacement, a second DTS machine was required to conclude the survey. The cost of replacing the hydraulic pump is not included within this GPR submission. The invoice from [redacted] pertained to trade support inclusive of accommodation, travel, hire of a fuel cell, fuel, and padlocks which were incremental costs associated with the GPR works.

A copy of the [redacted] invoice, previously supplied to the QCA by Aurizon Network via email on 30 November 2017, is available in **Attachment C**.

Calculation of Plant Depreciation

An excel spreadsheet, titled 'GPR Plant and Labour Rates _QCA' outlined plant rates and labour rates that would be charged to each shift performed by the Stabiliser in FY17. This data was supplied to the QCA by Aurizon Network via email on 30 November 2017. The B&H Report stated: "*Whichever calculation is chosen for the appropriate depreciation of the machine it is grossly overestimated for the short amount of time it is used for this work.*"[6]

To clarify, depreciation is recovered as a component of the plant rate of [redacted] per shift. The annual depreciation for a DTS machine (Stabiliser), as outlined in the plant rate calculation, was calculated to be [redacted] per annum for 80 shifts. 80 shifts were estimated for the full scope of CQCN work the stabiliser completes over the year, which includes GPR and other unrelated works. Whilst the annual depreciation for the DTS machines was [redacted] the actual depreciation cost relative to the GPR shifts (15 shifts in total) was only [redacted]

Total depreciation claimed through plant rates include a portion of other depreciation (e.g. for vehicles and small plant in the Plant Maintenance section) and is apportioned accordingly and recovered through the main bookable plant.

Refer to the **Attachment D** for a breakdown of depreciation for the total cost of Plant Usage.

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[4] GPR 2016 project – Phase 2 - Civil and Electrical Engineering Close-out Report, page 3.
[5] The B&H Report, page 1 of 14.
[6] The B&H Report, page 5 of 14.

Tender Process

With regards to Aurizon Network's tender process, the B&H Report stated that: "*a 10 day tender period is insufficient for work of such complexity for reasonable responses from tenderers other than the incumbent.*"[7]

To clarify, Aurizon Network facilitated a fair and correct procurement process when tendering for the GPR survey. Requests for Proposals (**RFP**) were delivered to four known GPR survey service providers that were expected to be capable of meeting the project requirements. These were delivered on 25 July 2016 with a due date of 4 August 2016. Three of the tenderers responded asking for further time for evaluation and so an extension was granted to 8 August 2016.

Given the experience of the four service providers, a 10 day tender period was deemed to be sufficient. During prior engagement all of the service providers had confirmed their experience with providing rail based GPR services.

Refer to **Attachment E** for a diagram of the process followed when tendering for the GPR survey.

Scope of Works

The B&H Report indicated some concerns around scope, specifically the need for a survey of a significant proportion of the CQCN and its balloon loops. It commented that:

> *"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…it is surprising AN needed to know such detail presumably for at least a second time."*[8]

Further the B&H Report stated:

> *"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."*[9]

Aurizon Network does not consider these concerns are valid, given the purpose of the GPR survey and Aurizon Network's use of the information recorded.

To clarify, the purpose of the GPR survey is primarily to source significant volumes of datasets specific to track condition metrics over time to assist in:

- The determination and planning of a preventative ballast undercutting programme; and
- To assist in the determination of root cause track deterioration.

This analysis cannot occur with one data set only, as changes in track condition (including ballast fouling and ballast depth) need to be measured over time to determine rates of deterioration and identify locations for further analysis and prioritisation

GPR is the primary source for quantifying ballast condition. Without use of GPR as means to provide granular ballast data, prioritisation of ballast undercutting becomes opinion-based. While recording car and the frequency of surfacing events are another means of measuring and better understanding track

[7] The B&H Report, page 4 of 14.
[8] The B&H Report, page 3 of 14.
[9] The B&H Report, page 3 of 14.

condition this does not provide data specific to ballast. The GPR survey gives analysis of ballast fouling levels and depth. The ballast depth can and will vary across the CQCN and over time.

The first extensive GPR survey took place in 2010 and GPR work was increased each year throughout 2011, 2012, 2014 & 2016 therefore it is incorrect to say there has been *"…a decade of surveys"*[10]. The data is relatively new and Aurizon Network are continuing to perform the GPR survey with the intent to compile data which provides track metrics (with an aim to determine deterioration rates) to assist in the determination and planning of its preventative ballast undercutting program.

As previously outlined in a response to RFI question #16, issued by the QCA on behalf of B&H Strategic Services on 7 November 2017, provided to the QCA on 30 November 2017:

> "*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).*"[11]

There are 56 balloon loops across the CQCN, constituting several kilometres of track and Aurizon Network have been working towards capturing GPR data in order to objectively assess and prioritise future ballast undercutting.

Ultimately, GPR provides tangible and quantifiable data, which is essential for promoting an evidence-based, preventative maintenance regime. Using GPR, Aurizon Network determines and prioritises preventative measures to maintain the track in a fit-for-purpose state, mitigating the risk of a major ballast-induced defect.

Page 2 of the 'GPR 2016 project – Phase 2 - Civil and Electrical Engineering Close-out Report' discussing the GPR scope is available in **Attachment F**.

Corporate Memberships

The B&H Report stated, *"…detail shows the inclusion of "CORPORATE MEMBERSHIPS & SUBSCRIPTIONS"*[12]. Aurizon Network provided data exported directly from SAP in a spreadsheet titled "GPR costs" to B&H as part of the RFI process, and can confirm that whilst this item had a Cost Element code named "Corp M'ships & Subs" ([redacted]) for an amount of [redacted], this cost related to software required for tender preparation. Within SAP the description states, "[redacted]", which was an external cost required to enable electronic tenders for the GPR work.

Refer to **Attachment G** for a copy of the [redacted] Invoice and a screenshot from SAP.

Calculation of Labour Rates

RFI question #29 sent to Aurizon Network by the QCA on behalf of B&H Strategic Services asked: *"What are the components of the charge of $790.56 for 4 hrs of employee number 407534? 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."*[13]

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[10] The B&H Report, page 3 of 14.
[11] Excel workbook titled '171127 GPR RFI List with AN response'.
[12] The B&H Report, page 5 of 14.
[13] Excel workbook titled '171127 GPR RFI List with AN response'.

In response, Aurizon Network supplied an excel spreadsheet entitled 'GPR Plant and Labour Rates _QCA' on 30 November 2017. This spreadsheet contained the detailed, bottom-up cost build up that was undertaken to determine the plant and labour rates (i.e. the hourly rate of [redacted] applicable to tasks performed specifically by the BCD Operations team member.

This bottom-up build accounts for the labour and on-costs associated with the 27 staff within the BCD Operations team, such as:

- labour consumables (e.g. accommodation, uniforms, meals & tool allowance); and
- overheads (e.g. mechanised production planning & manager overheads).

An average labour rate per hour is then determined having regard to the average working hours per day (9.5 hours), leave and applying appropriate reductions for non-productive activities (i.e. training & admin). These labour rates are then charged out to the various jobs performed, based on the total hours booked by each employee to each task. It should be noted, however, that the delivery of the GPR works required the involvement of BCD Operations employees, and support from employees from other disciplines (e.g. engineering).

The total cost of labour included in this GPR Submission is [redacted]

The B&H Report states: "*…These calculations point to consulting type accounts and/or double counting of on-costs and overheads, or inappropriate calculations..."*[14] Aurizon Network's costing methodology ensures there is no double-counting of costs, as costs are only charged on the basis of activities actually performed. Actual costs collected against the relevant activity are collated at project level in SAP, and costs are reported directly from SAP. In addition, a review is carried out by the relevant Project Manager and Finance Business Partner prior to finalisation of the costs.

Furthermore, the QCA's UT4 Final Decision specifically reduced Aurizon Network's UT4 maintenance allowance by $3.6m which Aurizon Network sought in order to fund additional GPR surveys during UT4 regulatory period.[15] In light of this deduction it is clear that the costs associated with the 2016 GPR works cannot be considered *"double-dipping".*

Refer to **Attachment H** for further detail on Aurizon Networks calculation of Labour Rates. Also, refer to **Attachment I** for the QCA's Final Decision.

Calculation of Plant Maintenance

The B&H Report stated: "*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…"*[16] The information provided to the QCA contained annual depreciation and maintenance charge information attributable to the DTS machines that were utilised to deliver the GPR works. To clarify:

- Only a small portion of the total annual machine maintenance and depreciation costs were allocated to the GPR works, and have been subsequently included in the GPR Submission total.
- The cost allocation is activity-based and reflects the number of shifts that these machines were booked to the GPR works.

[14] The B&H Report, page 5 of 14.

[15] QCA, Final Decision, Aurizon Network 2014 Access Undertaking – Volume IV – Maximum Allowable Revenue, April 2016, Table 89, pg. 151.

[16] The B&H Report, page i.

- These costs were not accounted for within the UT4 maintenance cost allowances, nor are they recovered through other tasks performed by the BCD operations team (due to our activity-based costing methodology).

For clarity whilst the calculated 'Labour for Maintenance' for the DTS machines was [redacted] per annum, the actual proportion charged to the GPR shifts (15) and therefore included in the claim is only [redacted]

For more detail, refer to **Attachment J** for a breakdown of the maintenance charges attributable to the two DTS machines.

Concluding Remarks

The B&H Report outlined that Aurizon Network did not use the most suitable vehicle to complete the GPR survey. The report appears to conclude a hi-rail truck would have been a lower cost, more appropriate solution, than Aurizon Network's chosen option of fitting a steel frame to one of its existing Dynamic Track Stabiliser (**DTS**) machine for completion of the relevant work. As outlined above Aurizon Network confirms a DTS machine was the most feasible and suitable vehicle to use when conducting the GPR survey. A railmotor was evaluated for use as outlined above but was deemed unsuitable due to its heritage listed status and as such modifications are heavily restricted and governed. Therefore, any modification would have required a number of time consuming checks and approvals, at the end which there would still have been a risk of an unfavourable outcome (i.e. non-approval). A hi-rail was evaluated for use as outlined above but was deemed unsuitable due to additional costs incurred as a result of a hi-rail truck taking longer to perform the survey and not being equipment or certified and lacking operational capabilities. Aurizon Network confirms two DTS machines (MMC009 & MMC010) were indeed used throughout the GPR works. However, the second DTS machine was required due to an unforeseen breakdown of the initial DTS machine, which required a hydraulic pump replacement. The cost of replacing the hydraulic pump is not included within this GPR submission.

Whilst the annual depreciation for the DTS machines was [redacted] the actual depreciation cost relative to the GPR shifts (15 shifts in total) and therefore included within this submission is only [redacted]. Aurizon Network confirms that the line item in the spreadsheet, "GPR Costs" with a Cost Element code name of "*Corp M'ships & Subs"* relates to an external cost of [redacted] for software required to enable electronic tenders for the GPR work.

As outlined above, the first extensive GPR survey took place in 2010 and GPR work was increased each year throughout 2011, 2012, 2014 & 2016 therefore it is incorrect to say there has been *"…a decade of surveys"*. The data is relatively new and Aurizon Network are continuing to perform the GPR survey with the intent to compile data which provides track metrics (with an aim to determine deterioration rates) to assist in the determination and planning of its preventative ballast undercutting program. The B&H Report did not appear to understand why Aurizon Network would survey balloon loops. Aurizon Network is aiming to build tangible and quantifiable data, which is essential for promoting an evidence-based, preventative maintenance regime. Given there are 56 balloon loops across the CQCN it makes sense to survey all 56 balloon loops as these are areas of track which require the data the most due to the amount of maintenance balloon loops incur, and where evidence based prioritisation of work (as between balloon loops) is important.

Aurizon Network's costing methodology ensures there is no double-counting of costs, as costs are only charged on the basis of activities actually performed. Actual costs collected against the relevant activity are collated at project level in SAP, and costs are reported directly from SAP. In addition, a review is carried out by the relevant Project Manager and Finance Business Partner prior to finalisation of the costs. Furthermore, the QCA's UT4 Final Decision specifically reduced Aurizon Network's UT4 maintenance allowance by $3.6m which Aurizon Network sought in order to fund additional GPR

surveys during UT4 regulatory period.[17] In light of this deduction it is clear that the costs associated with the 2016 GPR works cannot be considered *"double-dipping"*. For clarity whilst the calculated 'Labour for Maintenance' for the DTS machines was [redacted] per annum, similarly to the plant rate depreciation, the actual proportion of maintenance charged within the plant rate [redacted] to the GPR shifts (15) is only [redacted]

Aurizon Network has provided further clarity on the issues outlined in the B&H Report and confirms within this submission, prudent and efficient costs associated with the FY17 GPR works of $1.35m for the QCA's approval under clause 4.3(c) of Schedule F.

Aurizon Network welcomes the opportunity to discuss any queries that you may have, and can provide access to the relevant experts to discuss any of the points in this submission.

[17] QCA, Final Decision, Aurizon Network 2014 Access Undertaking – Volume IV – Maximum Allowable Revenue, April 2016, Table 89, pg. 151.