11 August 2025

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Economic Regulation Authority
Level 4
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Submission via online form

Dear Nathaniel

Re: Arc Infrastructure's statement of the depreciated optimised replacement cost and statement of the depreciation schedule

Introduction and summary

Pacific National welcomes the opportunity to comment on the Depreciated Optimised Replacement Cost (**DORC**) valuation of the railway infrastructure in Western Australia that is controlled and managed by Arc Infrastructure.

Pacific National has an interest in the DORC value given we operate trains on the Arc Infrastructure standard gauge rail network between Perth, Kalgoorlie and Esperance.

In summary, whilst Pacific National appreciates that the DORC estimate is the subject of an extensive report by GHD, Pacific National believes there are a number of aspects that the Economic Regulation Authority (**ERA**) will need to review carefully (in some cases after receiving its own professional advice), as well as areas where we think the proposed approach is incorrect. In particular:

- *Scope of the DORC valuation* – the ERA should review carefully whether the assets that the Costing Principles require to not be included in the DORC have been properly defined and relevant capital works and costs excluded. In particular, the costs of "formation" and "access roads" are material components of the DORC valuation. In our view, the ERA should consider whether these assets should be treated as part of "cuttings and embankments".
- *In-house estimates and inputs based on judgement* – most inputs to the DORC valuation have not been substantiated based on evidence (such as unit rates and the various multipliers that have been applied to the unit rates to derive a total cost) or are based on GHD's judgement (such as the geographic multipliers). We consider that the ERA should seek validation of these inputs.
- *Depreciation of assets currently in service beyond expected useful life* – where assets of the existing railway network remain in use beyond the standard asset lives that are applied in the DORC calculation, GHD has assumed a remaining life of 10 per cent of the standard asset life (90 per cent depreciation). We recommend the ERA to consider an alternative approach of fully depreciating these assets in the DORC valuation, which has precedent in other DORC valuations.

- *Service potential differential* – even if the "optimised" network is constructed to meet the same forecast of demand as the existing asset, the fact that a new asset is being constructed means that higher axle loadings and speeds would be likely if the optimised network was in place compared to the actual network. Similarly, a new control system should permit more efficient train operations (and so faster average speeds). The DORC valuation should include a downward adjustment for the difference in the value to users of the poorer service potential of the actual asset.

- *Assumed construction timeframe* – the cost of finance during construction accounts for approximately 30 per cent of the DORC estimate, which is partly attributable to the assumption that the network takes 19 years to construct. In our view, a more appropriate assumption would be a construction timeframe for discrete parts of the network over shorter periods of time with a correspondingly lower cost of finance during construction.

We expand upon these issues below. We first provide some contextual background to the estimation of DORC values.

1. Contextual background

1.1 Economic principles behind DORC valuations

The methodological requirements for the DORC valuation are set out in the Costing Principles approved by the ERA and dated 11 July 2025. However, as context for our submission, we summarise below the economic underpinnings of a DORC value.

DORC is a method of valuation that values an asset as:

- the cost of building a new asset to provide the relevant service using new technology and optimised for forecast demand; less
- a written down amount to reflect the configuration, age and condition of the existing asset that causes the value of the existing asset to be less than the new asset.

A DORC value is an economic concept.

The economic justification of a DORC value is that it is the value that the relevant assets would have in a hypothetical competitive market. It is the value that a hypothetical competitive new entrant to the market would place on the existing asset given the alternative of building a new asset to meet the same forecast demand for services, that is, a "second hand" value.

This valuation by a new entrant would be less than the straightforward cost of replacing the existing asset with a new equivalent due to:

- the existing asset having a configuration that reflects its historical development (and potentially the outcomes of forecasts that were not borne out), whereas a new asset would be constructed that meets today's forecast of demand for services at lowest cost (the "optimised" component of the DORC); and

- the existing asset potentially having a higher cost of operation and/or a shorter remaining life than a new asset and providing a better standard of service for customers (the "depreciated" component of the DORC).

Determining a DORC typically occurs in two steps:

- determining an optimised replacement cost (**ORC**) for the notional new asset; and
- writing down, or depreciating, the ORC to derive the DORC.

There are complex issues to consider in each of these stages.

Optimisation and the optimised replacement cost

Consistent with the economic justification of the DORC, a hypothetical new entrant to the market for the service would consider the cost of an optimised new asset having regard to:

- construction using modern materials, equipment and technologies (the "modern equivalent asset"); and
- optimised design and configuration to provide a service potential to meet the forecast demand, which may differ from the design and configuration of the existing asset if this asset was constructed to meet different service requirements or was constructed by a series of augmentations to an original asset as the market developed over an extended period.

There are complex and potential contentious issues in deriving the optimised design and the ORC, such as:

- the level of service potential to be reproduced, which might be variously considered to be the current level of demand or a forecast of future demand with the uncertainty inherent in any forecast;
- the assets to be included in the valuation, such as whether the value of land, cuttings and embankments for an existing railway line should be included or excluded from the replacement cost;
- is the new asset to be constructed to meet a forecast of demand be constructed as a one-off project or as discrete projects for parts of the railway network;
- is the optimisation analysis of a limited nature involving only the removal of any surplus assets or excess capacity, or does it involve considering reconfiguration of the asset, or extend to considering fundamentally different assets to deliver the transport service; and
- in estimating construction costs of the notional new asset, whether a "brownfields" or "greenfields" construction assumption is to be used, which have significant consequential impacts on costs of planning and regulatory approvals, the particular capital works for the hypothetical new asset, and the time period of construction.

Depreciation and the depreciated optimised replacement cost

The depreciation step involves scaling down the ORC to reflect the lower value of the existing (old) asset relative to the new asset to reflect a difference in forward-looking economic value.

The existing asset will typically have a lower value than the notional new asset because of:

- a lesser service potential of the existing asset due at least to a shorter useful life of the (already "old") existing asset, but also potentially to factors such as the inability of the existing assets to provide services of certain qualities or types, or as high a standard as can be delivered by the optimised new asset;

- higher operating and maintenance costs of the existing asset due to factors such as age, configuration and construction materials; and
- a shorter period until renewal or replacement of assets is required.

Addressing these causes of difference in value between the existing and optimised assets, a "conceptually correct" formula for calculating the DORC is:

$$DORC_0 = ORC_0 - \sum_{t=1} \frac{Service_{New,t} - Service_{Existing,t}}{(1+r)^t} - \sum_{t=1} \frac{Cost_{Existing,t} - Cost_{New,t}}{(1+r)^t}$$

Where $DORC_0$ and ORC_0 are the DORC and ORC values at the present time, $Service_t$ is the service potential of the existing and new (optimised) assets in each of the time periods t, $Cost_t$ is the operating, maintenance and renewal/replacement cost of the existing and new assets in each of the time periods t, and r is the discount rate.

It follows from this formula that the DORC will be a written down (depreciated) value of the ORC if by the value of:

- the discounted amount by which the value (to users) of the service potential of the existing asset is less than the new asset (which will at the very least result from a shorter life of the existing asset and the service potential of the existing asset falling to zero after some number of periods while the notional new asset would continue in service), and
- the discounted amount by which the operating and maintenance costs over the remaining life of the existing asset is greater than that of the new asset and the time-value benefit of the later renewal/replacement required with a new asset.

The depreciation step of the DORC can also be complex and contentious, particularly if attempted in accordance with the conceptually correct DORC, for reason of factors such as:

- it can be information and assumption intensive, particularly in respect of service potential and forecasts of operation and maintenance costs;
- there may be potential differences in the value gap between the existing and new assets depending upon whether the new asset is assumed to be owned by a new entrant or the incumbent owner, due to potential differences in tax liabilities; and
- the choice of discount rate.

1.2 Requirements for the DORC valuation under the Costing Principles

The Costing Principles set out the requirements for the determination of the DORC which are consistent with pragmatic methods that have been used by regulators that avoid some of the complexities of a conceptually correct DORC. In particular, the Costing Principles:

- imply a reproduction of the existing railway network without attention to optimisation of either the railway system or of the relevant transport functions; and
- require depreciation of the ORC to the DORC by a linear (straight line) depreciation based on asset age and assumed standard design life, without having regard to the actual dynamic of decline in service

capability of the asset over time, while allowing for depreciation to reflect a higher operating cost of the existing assets compared with the new assets.

It is noted, however, that the Costing Principles are silent or provide incomplete guidance on some potentially important elements of the DORC valuation:

- **Differences in level of service between the existing and new assets**: The costing principles imply that the new asset is constructed to deliver the same levels or service and to meet the same demand as for the existing network. The Costing Principles are silent on the treatment of any differences in service capability and achievable service standard between the existing assets and new assets, where these differences (which would typically comprise a greater service capability and service standards of the new assets over the old assets) may be an inherent feature of new assets constructed with modern technologies and to modern standards.
- **The timing assumptions for construction of the new asset**: While the costing principles indicate that "the profile of construction costs will be determined on the basis of a single stage project comprised of concurrent individual projects", it is not clear whether it is to be assumed that the entire network is to be constructed as a single project, or whether parts of the network would be constructed as individual projects.

2. Elements of the DORC valuation that the ERA should examine

While we observe that the DORC value submitted by Arc Infrastructure is the subject of an extensive report, we consider that there are several aspects of the valuation that need to be considered by the ERA, as well as aspects that we think need to be changed. These are matters that relate to the methodology on which the Costing Principles are silent on, elements of the DORC valuation method that require judgement to be applied, and evidence for the assumptions and estimates to be applied when calculating the DORC.

More specifically, we submit that the ERA should give consideration to the following matters:

- whether the assets that the Costing Principles require to not be included in the DORC have been properly defined with relevant capital works and costs excluded.
- whether in deriving the replacement cost and optimised replacement cost, the estimates of costs have been properly derived and are adequately supported by evidence.
- whether any service capability advantages of the new (modern equivalent) assets over the existing assets have been properly identified and the value deducted from the ORC in the depreciation step; and
- whether the timing assumptions in construction of the new assets are appropriate, and hence costs of finance during construction are properly valued.

We expand on these matters as follows. Page references in the following are to the GHD DORC valuation report.

2.1 Exclusion of certain capital works and work elements

The costing principles require exclusion from the initial regulatory asset base of costs of cuttings and embankments made prior to the commencement of the Western Australia's Railways (Access) Code 2000 (**Code**).

We submit that the ERA should consider whether the assets and capital works that fall within the meaning of "cuttings and embankments" have been properly considered in the DORC valuation. In particular, we submit that the ERA should consider whether the component assets of "formation" and "access roads" that were in place at the commencement of the Code should be considered to fall within the meaning of cuttings and embankments, having regard to:

- the asset class of formation is a large component of the ORC ($2755.2 million) and are assumed to have an indefinite life and not depreciated (GHD pp125,126); and
- access roads also constitute a large component of the ORC and are approximately 50 per cent depreciated in deriving the DORC (GHD pp125, 126).

We consider that both formation and access roads, where in place prior to the commencement of the Code, should be considered as part of cuttings and embankments and excluded from the calculation of the DORC.

2.2 Cost estimates and related assumptions

In deriving the construction costs of modern equivalent assets, GHD has applied unit costs indicated to be derived from actual costs of comparable projects and in-house information. There is no actual evidence presented to substantiate unit costs.

Further, GHD indicates it has applied its own experience and professional judgement in deriving large costs allowances for the following cost items.

- Contractors' overheads and risk allowances that are calculated as uplifts on labour and materials costs and which are a very large component of total construction costs: 30 percent for contractors' preliminaries,9.5 per cent for contractors' overheads and profit and 5 percent for risk allowance, applied cumulatively (GHD p24 and following).
- Railway owner project costs, which are also calculated as uplifts on construction costs and which are also large: project design 4 per cent (p99), planning and development consent costs of 1.3 per cent, project and construction management costs of 5 per cent, construction supervision of 7 per cent of construction, and corporate and other costs of 3 per cent of construction (GHD p99 and following).

GHD has applied location adjustment factors to quantify expected higher costs of construction in regional areas than for the Perth metropolitan area (GHD p23). The escalation factors range from 1.1 in the near metropolitan and Avon Valley areas to 1.5 in the eastern goldfields and Kalgoorlie-Esperance areas.

There has been no evidence provided to support these escalation factors and we submit that the ERA should consider whether these escalation factors are valid assumptions for cost estimation, having regard to:

- whether the metropolitan area can reasonably be assumed to be the lowest cost region, given that there might be several factors that would actually cause construction costs to be greater in the Perth metropolitan area than regional areas (such as conducting works in more confined areas, dealing with environmental and social impacts, etc); and
- whether the values of escalation factors are supported by evidence.

2.3 Depreciation of assets currently in service beyond expected useful life

Where assets of the existing railway network remain in use beyond the standard asset lives that are applied in the DORC calculation, GHD has assumed a remaining life of 10 per cent of the standard asset life (90 per cent depreciation) (GHD p123). GHD cites precedent regulatory decisions for this approach.

We submit that the ERA should consider the assumptions about depreciation of assets that are still in service beyond the standard asset lives assumed in the depreciation calculation.

- There is also regulatory precedent for fully depreciating any such assets. For example, in Queensland Competition Authority's (**QCA**) decision on Queensland Rail valuation, the QCA placed a zero value on assets whose actual life exceed their expected useful life (Queensland Competition Authority Queensland Rail's 2013 Draft Access Undertaking, Draft Decision October 2014, p 138).
- To the best of our knowledge, the ERA (and its predecessor regulatory agencies) have consistently used average remaining asset lives of asset classes in considering DORC valuations for regulated infrastructure, which implies fully depreciating any assets still in use beyond standard assets.
- Where assets currently remain in service beyond their standard asset lives, there is more likely to be a degraded service potential which should be considered in the depreciation step of the DORC calculation (as addressed below).

2.4 Depreciation allowances for differences in service capability of existing and new assets

New railway assets constructed to modern standards might be expected to have a greater service capability than the existing railway assets with respect to matters such as train speeds, axle loads and the efficiency of train control. Where a significant difference exists, the lower service capability of the existing assets should be reflected in the depreciate adjustment from the ORC to the DORC.

In the derivation of the DORC, GHD indicate that the modern equivalent asset is constructed to deliver the same service capability as the existing assets or to meet the same demand forecast and no consideration is given to a depreciation adjustment to reflect differences in service capability.

We submit that the ERA should consider whether there are differences in service capability between the existing and modern equivalent assets that should be addressed in the DORC valuation. For example:

- whether the modern equivalent asset for rail construction (such as concrete rather than steel or timber sleepers) inherently allows higher service standards with respect to axle loads and train speeds; and
- whether the modern equivalent signalling assets allow for more efficient train control, and so greater average speeds to be achieved.

If any such differences in service capability are likely, then we submit that the ERA should consider whether corresponding depreciation adjustments should be made to reflect the inherently lower value of the existing assets.

2.5 Timing assumptions and funding costs in construction of the new assets

The funding cost of construction (interest during construction) comprises approximately 30 per cent of the ORC ($9,140 million or $8,541 million depending on the signalling option). These high funding costs are a result of an assumed period of construction of the railway network as a single exercise of 22 projects over a period of

19 years (GHD p109). There appears to be an implicit assumption that operation of the railway network does not commence until the end of the 19 year construction project.

We submit that an alternative scenario of construction timing would be consistent with the economic concept of the DORC and would substantially reduce the funding cost component of the ORC.

The DORC is conceptually based on a hypothetical new entrant entering the market to provide the rail service. The construction period used by GHD implicitly assumes that the hypothetical new entrant would enter the market by constructing the entire rail network.

In our view, the ERA should consider whether it may be more appropriate to assume that the hypothetical new entrant would only enter part of the market, and therefore the construction timing should be based on the time for construction of discrete parts of the network over periods substantially less than 19 years. This would have the effect of substantially reducing the funding cost component of the DORC.

We thank the ERA again for the invitation to make a submission and trust the ERA will find these comments useful in reviewing Arc Infrastructure's statement of the depreciated optimised replacement cost and statement of the depreciation schedule. If the ERA wishes to discuss the contents of this submission, please do not hesitate to contact Michelle So at [redacted]

Yours sincerely

[redacted]

Andrew Beck
Chief Legal Officer