



21 June 2019

Ewan Austin
Project Engineer
Subsea 7 Australia Contracting Pty Ltd

Our ref: 6137290

Dear Sir

**Learmonth Pipeline Fabrication Facility - Peer Review
Landscape and Visual Impact Assessment Peer Review Close-Out Report**

GHD Pty Ltd (GHD) undertook a review of the Learmonth Pipeline Fabrication Facility Landscape and visual impact assessment prepared by 360 Environmental for Subsea 7 Australia Contracting Pty Ltd (Subsea 7).

An initial review and gap analysis against each of the ESD item was provided on the on C CLIENT FINAL Rev 0 dated the 15th January 2019 with follow up clarifications provided on E PEER REVIEW FINAL Rev2 dated 3rd May 2019

The final peer review was undertaken on document F PEER REVIEW FINAL Rev3 dated the 14th June 2019.

The peer review has evaluated the LVIA against the Western Australian Planning Commission document, *Visual Landscape Planning in Western Australia, a manual for evaluation, assessment, siting and design* (2007), which has been produced to offer guidance for practitioners undertaking visual assessments in Western Australia.

Our conclusion is that the method used in undertaking the Learmonth Pipeline Fabrication Facility Landscape and visual impact assessment is consistent with the WA Visual Landscape Planning guidelines and presents an assessment that responds to the key requirements of the guideline

The table identifying the gap analysis against the ESD is attached. In addition there were four minor comments that were addressed verbally, these were not material to our assessment and close out of the report

Sincerely
GHD

A handwritten signature in blue ink that reads 'Laura Farrell'. The signature is written in a cursive, flowing style.

Laura Farrell
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ESD ITEM	WAPC Guideline	360 LVIA (the sections of the Report that addresses/relevant to these items)	Peer Review Comments	Identified Gaps in Assessment	360 Environmental response to GHD's Peer Review	Peer Review Close Out of Peer Review
73	Refer to Figure 1 Step 2 and 3	Section 4.2	Ten Landscape character units are identified, described, assigned a landscape value, mapped and photographed. The assessment is often limited to one and two word descriptions and more description could provide a greater context. However this is appropriate to meet requirements.	No additional information required	Noted.	Closed out
74	Refer to Figure 1 Step 3	Section 1.4, 4.2, 4.3 and 4.6	In section 1.4 the ESD has been paraphrased from EPA document and is misleading. Cross-reference with other technical reports that are addressing noise, dust, and light-spill is required. Description around the existing recreation uses is required. Information is required around the foreseeable, land and recreation uses is required.	Description around the existing recreation uses is required. Information is required around the foreseeable, land and recreation uses is required.	The Scope and ESD Items have been updated in Table 1 to reflect the exact wording of the ESD. Note that Scope Items 79 and 80 were not part of the scope for the LVIA as they are discussed in the Social Surroundings Factor chapter of the Public Environmental Review document (PER) as well as the Social Impact Assessment (SIA) report (Subsea 7; 360 Environmental 2019). Both these documents have now been cross-referenced in Table 1 and throughout the LVIA document However, light and noise have now also been considered in the LVIA report in Section 5.2. Noise and odour are discussed in the Social Surrounds Chapter of the PER.	Closed out
					Section 2.1.6 – Valued Characteristics added. Figure 8 (sensitive receptors and valued areas) has now been moved to this section to provide support to the text. It is now Figure 6	Closed out
					Section 5.3.5 has been added to discuss potential impacts on future recreation/tourism, based on the Shire of Exmouth's 2015-2025 Local Planning Strategy. Information pertaining to future land use and recreation is also discussed in detail in the Social Surrounds Chapter of the PER and the Project's Social Impact Assessment (360 Environmental 2019). Section 5.3.5 also includes information from these reports and makes reference to them.	Closed out
75	Noise is not a factor in WAPC (2007) methodology. Dust, light-spill and alteration to landscape to be assessed refer to Figure 2 Step 3	Section 1.4, 4.5 and 5	In section 1.4 the ESD has been paraphrased and is misleading. Cross-reference with other technical reports that are addressing noise, dust, and light-spill is required. Impacts on alteration of landscape are discussing in section 4.5 and chapter 5 with relevance to visual amenity. No discussion has been provided on dust and light-spill.	Identify and discuss the potential sources and impacts of dust and light-spill for all stages of the life cycle of the Proposal.	The Scope and ESD Items have been updated in Table 1 to reflect the exact wording of the ESD. Note that Scope Items 79 and 80 were not part of the scope for the LVIA as they are discussed in the Social Surroundings Factor chapter of the Public Environmental Review document (PER) as well as the Social Impact Assessment (SIA) report (Subsea 7; 360 Environmental 2019). Both these documents have now been cross-referenced in Table 1 and throughout the LVIA document. Light and noise have now also been considered in the LVIA	Closed out

						report in Section 5.2. Noise and odour are discussed in the Social Surrounds Chapter of the PER.	
						A brief discussion of impacts from light spill and dust has now been included in Section 5.2.1 and 5.2.3. Noise, dust, odour and light spill impacts were discussed and assessed in the Social Surrounds chapter of the PER. Since impacts were deemed low, no further technical studies or modelling was undertaken. The Social Surrounds Chapter of the PER and the Social Impact Assessment report (360 Environmental 2019) have both now been referenced throughout the report.	Closed out
76	Design and undertake a visual impact assessment (VIA) for before, during construction, after construction, during operations, and after closure and decommissioning, to assess the impacts of the Proposal on visual amenity in accordance with the Western Australian Planning Commission (2007) Visual Landscape Planning in Western Australia: a manual for evaluation, assessment, siting and design.	Refer to Figure 2 Step 1 Determine visual management objectives		Refer to EDS item 73	Refer to EDS item 73	Noted.	Closed out
		Refer to Figure 2 Step 2 Describe proposed development	Section 1.2 and 3.4.1	A sufficient description of the main visual components of the Proposal has not been provided. This should include a description of the Proposal during construction, operation, after closure etc. Illustrations or diagrams should be included.	Additional information required: Analyse, describe and illustrate the main visual components of the Proposal for all stages of the life cycle of the Proposal. Illustrations, drawings or simulations of the Proposal should be realistic and comprehensive.	Section 1.1 has been expanded to provide a thorough description of the Project. This has been divided into each phase (construction, operation etc.) and differentiated between onshore and offshore components. The Project description now includes the physical elements of the Project (proposed clearing, infrastructure, facilities etc.) and the activities of the Project (operational hours, vehicles and machinery, launching and towing activities). It also outlines the potential impacts from each of the Project elements and activities whilst briefly providing mitigation measures. This allows readers a comprehensive understanding of the Project and sets the context for the LVIA. Visual aids have also been included for the life-cycle of the Project for onshore and offshore components (Plates 1- 4).	Closed out

	<p>Refer to Figure 2 Step 3</p> <p>Describe the potential visual impacts</p>	<p>Section 4.4 and section 5.2 – 5.5</p>	<p>The assessment criteria as presented Table 13 need additional clarity with regard to the definition text at the bottom of the table.</p> <p>There is a general over reliance of percentages of land take as defined using GIS analysis in lieu of a qualitative assessment of landscape and visual impacts. This is particular evident in section 4.5 where % and km² are used as a measure of predicting impacts. This does not add to the qualitative nature of this type of assessment. This is also evident when discussing duration of impacts with one defined as a percentage of a year being 1.47%. This is not consistent with the methodology outlined in the reference guideline (and accepted standard practice).</p> <p>There is limited discussion in the report on the visual impact in relation to magnitude, duration and significance of specific visual impacts. The assessment of impacts on VP is disjointed and spread between a number of sections including section 4.4, 4.5, 4.6, 5.2 and 5.3. A review / reorganisation of the structure of the report should be done to allow for readability and ease of identification of the impacts of the proposal.</p> <p>The assessment of impacts in section 4.4 is very brief and placed in the very bottom corner of the photomontage layouts.</p> <p>Section 5.3 the impacts in relation to VP3 are too low given the physical development / disturbance in the area. Additional information within a Proposal description and the stages of development are needed.</p> <p>Assessment of the capacity of the landscape to accommodate change has not been provided.</p> <p>While the significance of impacts is identified in section 4.4 no discussion or rationale for this assessment on landscape character is provided.</p> <p>No discussion of construction stage impacts.</p> <p>No additional design options were identified or discussed.</p>	<p>Additional description and clarification around the impacts on landscape and visual amenity, including ratings, are required to be in accordance with the WAPC (2007) guidelines.</p> <p>A review / reorganisation of the structure of the report should be done to allow for readability and ease of identification of the impacts of the proposal.</p>	<p>The methodology summary has been adjusted in Section 3.1 to clearly show the relationship between the WAPC guideline, the report and the methods used to determine impacts.</p> <p>Table 12 and 13 along with the categories at the bottom of the table have been restructured to improve clarity.</p> <p>The LVIA states that the reliance on impact statistics alone is not considered best practice (Section 3.4.5) and therefore provides a balanced impact assessment using qualitative measures. Given the polarising nature of the Project, some grounding in statistics is essential to provide a fallback to likely public comment disputing the validity of the findings based on potentially biased qualitative professional judgement. Further discussion has been provided in the report on how these statistics (percentages) were calculated and how they inform the impact assessment. The methodology sections in 3.4.2 have been updated to provide clear methodology and sections 4.6 and 5.4.5 now include how the percentages (statistics) inform the impact assessment. The quantitative sections of the report has now been explained in detail throughout the LVIA. In addition to this, information supporting the LVIA has been included from the Social Impact Assessment and Social Surrounds Chapter of the PER to form a more balanced qualitative discussion.</p> <p>The WAPC guideline does not give specific requirements of qualitative assessment. Step 3 of the WAPC VIA methodology does state that the VIA should identify and describe likely changes to visual landscape character views using maps, 3D materials, and viewshed analysis and then document these in tabular form with maps and photographs for priority sites. It also states that in determining significance of impacts, a criteria should be developed and take into account the magnitude of impacts on landscape characteristics and views as valued by the community. The LVIA assessment methodology has included all of the above in Section 3. Stakeholder and community engagement has also formed a large part of the methodology of the LVIA to determine valued places and priorities and provide a qualitative discussion, Section 3.2.3 has been expanded to provide details of how community</p>	<p>Closed out</p> <p>Closed out</p>
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					<p>engagement was used to inform the selection of vantage points and various proposed visual mitigation measures. GLVIA3 (standard practice and guideline) also states that whatever method used should be consistent and clear, which is has been attempted in this instance (note that we have made some changes to improve the clarity aspect). For clarity, a 'landform' component was included in the LVIA to support legislative requirements for the EPA factor for Landform. Landforms is considered separate to Landscape Character (being just a physical component of), hence why LCUs and Landforms are described separately, and impacts for LCUs and Landforms are calculated and discussed separately. In assessing the impacts under Landforms, the EPA does not just rely on Landscape Character (that is more related to amenity). Therefore, both are required.</p>	
					<p>The magnitude, duration and significance of impacts to specific viewpoints is summarised on the results panels in Section 4 (Results), and then discussed in more detail in Section 5 (Discussion).</p> <p>This assessment requires the consideration of a large number of factors not normally considered during typical VIA (e.g. a variety of polarising social values and land uses, present and future cumulative impacts, separate construction and operation phases, separate guidance documents for onshore/offshore areas and inclusion of specialist scope items such as light pollution and dust impacts). Structuring a single report to flow between all these often disjointed aspects has aimed to provide the reader an understanding of the various scopes of works and the potential associated impacts.</p> <p>The structure of the report has been adjusted slightly to improve readability.</p>	Closed out
					<p>Section 5.2.3 discusses impacts to VP3 and 4 in detail. It has been made clear that impacts are significant for short durations of time, but when considering the longevity of the Project, they are not as significant. Permanent infrastructure (the launchway) is not highly obtrusive when considering it is built low to the natural terrain, and is in line with other infrastructure that is considered part of the landscape character.</p>	Closed out
					<p>Discussion on the visual absorbance capacity is now added into Section 5.2 along with rationale.</p>	Closed out
					<p>A rationale was provided, and is detailed in Section 3.4.5, which considers the nature of the impact (on landscape character) in conjunction with the value of that landscape. Section has been restructured to improve clarity on this.</p>	Closed out

						Discussion on construction impacts has now been included in Section 5 and Section 1.2.1.	Closed out
						The required scope of the LVIA and ESD was only to assess the current design of the Proposal. Whilst additional design options were not assessed, visual management measures have been recommended in the design and implementation of the Proposal to further reduce potential impacts. This is discussed in Section 5.6.	Closed out
	Refer to Figure 2 Step 4	Section 5.6	Refer to EDS item 78	Refer to EDS item 78	See response below to ESD Item 78.		Closed out
	Develop visual management measures						
	Refer to Figure 2 Step 5	Section 5	A sufficient summary has been provided however refer to EDS item 78 for response to mitigation measures.	Refer to EDS item 78	See response below to ESD Item 78.		Closed out
	Prepare final recommendations						
		Maps	Inconsistent use between A3 and A4 of maps in report	Some maps are hard to read and consistent approach to size would be useful	All maps are now in A3.		Closed out
		Photography	Present each photo / graphic as an individual figure as it is confusing as per Plate 6 and Figure 11. The use of different lens potentially leads to a misrepresentation of the visual environment (Plate 12 vs plate 13). A consistent approach to the presentation of the images within the report would add clarity i.e. use 50 or 30 mm.	Provide a consistent approach to the lens size / FOV of photography provided in the report.	A strong border, gaps and arrows have now been added over these images to identify them as a group.		Closed out
					The two sites using a wider horizontal field of view (80o) photographed using a 24mm focal length was initially thought to be suitable considering the distance of the vantage point and expansiveness of the site. However, upon modelling, it appeared that the site occupied a smaller area of the frame than initially anticipated. These images have now been cropped (horizontally and vertically) to present a 60o horizontal field of view, equivalent to a 50mm focal length (effectively 'zooming in' from 24mm to 50mm). Images captured at a 50 mm focal length were used for photomontages as a panoramic image covering a 60o horizontal field of view (stitched from two single frames with 50% overlap). 24 mm images were used largely for site and landscape characterisation due to the broader 80o horizontal field of view. This methodology is in line with current guidance (Landscape Institute 2018; Landscape Institute 2011; WAPC 2007). Cropping does not introduce compression or background-foreground foreshortening because of the camera and subject being at the same distance. Consultation with Landscape Institute on this matter confirmed the suitability of this methodology. This methodology has been detailed in Section 3.4.3. For reference, a comparison between two photos taken at VP05 has been provided (ref. Plate 1 and Plate 2 below),		Closed out

						one taken at 24mm equivalent (cropped to a 60 degree FOV), and a panorama of two 50mm equivalent photos (at a 60 degree FOV).	
			Photomontages Section 4.4	<p>Photomontages have been produced from eight VPs. Each VP shows the impacts for</p> <ul style="list-style-type: none"> • Pre- Development • Construction Phase • Operational Phase <p>A repeatable methodology has been defined and supporting photographic technical information has been provided. However the images are appear as A4 in the report. It would be better if these were presented as A3 and produced to a higher resolution as the legibility is poor.</p>	Increase resolution and size of photomontages for improved legibility.	All photomontages are presented in A3 throughout the report at a display resolution of 150 dpi.	Closed out
77	The VIA will identify and describe the aspects of the Proposal which may potentially affect the visual landscape character and scenic quality values both temporarily and permanently, using agreed (by the EPA) reference and vantage points of surrounding areas and use area's viewer positions and perceptions.	Refer to ESD 76		<p>No VP maps have been provided. Figure 13 shows all surveyed points.</p> <p>The list of VP in section 4.3 could be divided only showing the VP that are discussed in the flowing section 4.3.1 – 4.3.9 and section 4.4. Points requested by the EPA need to be identified. The additional VPs in the table and the associated Figure 13 could be moved to Appendix A to alleviate some of the confusion.</p>	Additional information / clarity required	<p>Figure 13 originally showed all surveyed viewpoints and key viewpoints. Figure 13 still maintains the numbering of all viewpoints, but now includes the VPX numbering as notified.</p> <p>Points requested by the EPA have now been identified. Having all viewpoints and track logs contained in the main report was done to demonstrate effort taken during the field survey. Moving this information to an appendix would reduce the page count by approximately two pages.</p>	Closed out
78	Predict the residual amenity impacts from the Proposal on the landscape, land and recreation use and amenity values (including visual, noise, odour and dust) after considering and applying avoidance and minimisation measures. Impact predictions are to include, but not be limited to:	Refer to Figure 2 Step 4	Section 5.6	Visual Management Objectives (VMOs) were identified for land base activities of the Proposal. These relate to two VP locations which photomontages representations of the VMOs were produced.	Additional text required on residual amenity impacts and cumulative impacts on amenity.	Visual Management Objectives (VMOs) are now called Visual Impact Mitigation Measures (VMMs). Residual amenity impacts after implementation of VMMs have now been discussed in Section 5.6. VMOs have been expanded upon for each component of the project, Table 2 has now been added in Section 1.3 and how VMMs will help to meet VMOs is now discussed in Section 5.6.	Closed out
	a. The likely extent, severity and duration of the impacts; and	Refer to Figure 2 Step 5	Section 5.6	While it was identified that impacts would be reduced with the implementation of the VMOs additional information with regards to the extent, severity and duration of the impacts after implementation of the VMOs was not provided.	Additional text required for extent, severity and duration of the residual amenity impacts	Residual amenity impacts after implementation of VMMs have now been discussed in Section 5.6.	Closed out
	b. Simulations/modelling of the predicted residual impacts from the Proposal, including changes to the landscape from the agreed	Refer to Figure 2 Step 5	Section 5.6	<p>Photomontages have been produced showing the VMO from two Viewpoints (VP). Each VP shows the impacts for:</p> <ul style="list-style-type: none"> • Pre - VMO Implementation 	<p>Increase resolution and size of photomontages.</p> <p>Provide discussion and / or illustration on the</p>	All photomontages have been produced in A3 at a display resolution of 150 dpi. Note that the document may have to be compressed to enable smooth web upload/viewing. It will be ensured that the size of the figures are maintained when the final report is issued with the PER.	Closed out

	reference and vantage points. Include the cumulative impacts on amenity (visual, noise, odour and dust) from the Proposal and other currently approved developments.			<ul style="list-style-type: none"> Post - VMO Implementation <p>The images appear as A4 in the report. It would be better if these were presented as A3 and produced to a higher resolution as the legibility is poor.</p>	cumulative impacts on amenity	Cumulative impacts are now discussed in Section 5.5.	
79	Review the social implications of the Proposal to planned activities within Ningaloo Marine Park, in the context of the stated objectives of each of the relevant social values outlined in the Management Plan for Ningaloo Marine Park and Muiron Islands Marine Management Area.		Not addressed	<p>A review of the social implications of the Proposal to planned activities within Ningaloo Marine Park, in the context of the stated objectives of each of the relevant social values outlined in the Management Plan has not been included in the report.</p> <p>The stated social values include: Indigenous heritage, Maritime heritage, Seascapes, Wilderness, Water sports, Marine nature-based tourism, Coastal use, Recreational fishing, Scientific research, Education, Commercial fishing, Petroleum development</p>	Information required in section 1.4, section 4 and section 5 with regards to the Management Plan for Ningaloo Marine Park and Muiron Islands Marine Management Area.	The ESD item relating to the Ningaloo Marine Park Management Plan was not in the original scopes of works for the LVIA as it is currently discussed in the Social Surrounds Factor chapter in the PER document. However, the Objectives relating to landscape and visual amenity from the Management Plan have now been incorporated into Section 1.5 (Legislative and Policy Framework) Discussion of the impact of the Project on these objectives has been included in Section 5.3.3.	Closed out
80	Identify management and mitigation measures for the Proposal to ensure residual impacts to land and recreation uses, and amenity (including visual, noise, odour and dust) are not greater than predicted.	Refer to Figure 2 Step 5	Section 5.6	<p>A number of VMOs to reduce the localised impacts around the Heron Point Area have been recommended. This language could be strengthened to actual objectives and mitigation measures rather than very high level recommendations.</p> <p>The report states that the Proposal is unlikely to cause a significant, long term impact to Landscape and Visual Amenity Values of the Exmouth Gulf or the Peninsula so no additional VMOs are offered.</p> <p>ESD 80 does not appear in Table 1 scope of works section 1.3</p>	<p>Add ESD 80 to table 1 section 1.3</p> <p>Additional information may be required as part of ESD Item 79.</p>	<p>ESD 80 has now been added to Table 1 in Section 1.3. and ESD item 79 has now been addressed in Section 5.3.3.</p> <p>VMOs are now referred to as Visual Management Measures (VMMs) in the document. These VMMs are specific recommendations to improve visual amenity at the site and Subsea 7 has noted these recommendations in the design of the proposal. The VMMs are discussed further in the Public Environmental Review and will continue to feature in stakeholder engagement sessions for future endorsement.</p> <p>The LVIA concludes that the Proposal is unlikely to cause significant, long term impact to the amenity values (without implementing VMMs). However, VMMs are proposed as opportunities to further reduce these low impacts.</p>	Closed out