Topic	Issue	Source	Option A – Northern Option Score	Option A – Northern Option Commentary	Option B – Southern Option Score	Option B – Southern Option Commentary
Economics / Feasibility	**Implementation Risk**					
	Constructability Risks	Stantec: **Attachment I1.** Technical Challenges and Risks (Section 5). Scored by Planz	-1	Canalizaton or realignment of Maire Stream	-3	Ground conditions prone to liquefaction. Complex reclamation and importation of fill. Tunnel Monaco Peninsula. Jenkins Creek culverted.
	Consenting Challenges	Stantec: **Attachment I1.** Technical Challenges and Risks (Section 5). Scored by Planz	0	Less complex from an RMA Perspective	-3	Numerous complexities both social, environmental and construction related.
	National Requirements - NZCPS, NPS-FM and NES-F	Planz: Statutory Considerations. Scored by Planz	-1	Implications for the piping / realignment of Maire Stream.	-3	NZCPS (Policy 10) provides a high barrier to reclamation.
	Regional Level Requirements - Nelson RPS / NRMP	Planz: Statutory Considerations. Scored by Planz	0	Balanced approach between providing for Strategic Infrastructure and environmental outcomes.	-3	Provisions (RPS- CO1.2.1, NRMP Policy CM1.2) seek to protect natural character, and natural and physical characteristics of the Coast, and avoid adverse effects as far as is practicable.
	District Level Requirements	Planz: Statutory Considerations. Scored by Planz.	0	Balanced approach between providing for Strategic Infrastructure and environmental outcomes.	-3	Provisions seek (NRMP Objective CM2 and CM4) to preserve the natural character of the coast, and associated amenity values.
	Economy					
	Construction Costs	Martin Jenkins **Attachment L.**	-1	Total costs for the northern extension option are estimated at between ($23m - $25m)	-3	Total costs for the Southern extension option are estimated at between ($43.6m - $51m) with additional costs (proxy $70m)
	GDP and Employment Creation (including Multiplier effects)	Martin Jenkins **Attachment L.**	1	Extending the runway creates the following output, GDP, and employment over the 3-year construction window: Northern option: Output: $32.9m GDP($): $15.5m Employment (FTEs): 133	1	Extending the runway creates the following output, GDP, and employment over the 3-year construction window: Northern option: Output: $32.9m GDP($): $15.5m Employment (FTEs): 133 Southern option: Output: $58.7m GDP($): $27.2m Employment (FTEs): 237 As the northern and southern options cause less than a 1% change in the GDP of the Nelson region, and less than a 0.5% change in the employment in the Nelson region, we have categorised them both as a minor positive.

	Reliability, safety and resilience Objectives	Martin Jenkins **Attachment L.**	2	There are moderate positive economic benefits from achieving the project's reliability, safety, and resilience objectives. The runway extension provides for higher passenger and freight limits (reliability), improves the safety of each flight, and positions the airport for future use by electric or hybrid planes (resilience). The runway extension options are scored the same because they both extend the runway to a length of 1,510m, and include the development of runway end safety areas (RESA).	2	There are moderate positive economic benefits from achieving the project's reliability, safety, and resilience objectives. The runway extension provides for higher passenger and freight limits (reliability), improves the safety of each flight, and positions the airport for future use by electric or hybrid planes (resilience). The runway extension options are scored the same because they both extend the runway to a length of 1,510m, and include the development of runway end safety areas (RESA).
	Runway Length	Airbiz **Attachment M.**	3	Target extension length achieved, on airport and golf course land	3	Target extension length achieved, with substantial reclamation in south
	Physical Restrictions	Airbiz **Attachment M.**	3	Unlikely to be increased restrictions for residents north of runway due to OLS being lower	3	Unlikely to be increased restrictions for residents south of runway due to OLS being lower
	Airspace Implications	Airbiz **Attachment M.**	3	Flight paths and procedures unlikely to be materially affected	3	Flight paths and procedures unlikely to be materially affected
	Integration of Infrastructure and Operations	Airbiz **Attachment M.**	3	Integration with existing infrastructure and operations likely to be fully achievable	3	Integration with existing infrastructure and operations likely to be fully achievable
	Geo Hazards					
	Ground Conditions	Stantec: **Attachment I1**	1	Soils likely to largely consist of well draining dune sands.	-2	The southern option is likely to have poorer ground conditions relative to the northern option due to the likely presence of soft estuarine soils in Jenkins Creek and the Waimea Inlet. The thickness of these estuarine soils is unknown due to there being no ground investigation information. These soils are likely to be challenging for investigation, design and construction of a southern runway extension, as well as being likely to require complex and costly geotechnical solutions.
	Settlement	Stantec: **Attachment I1**	1	Settlement effects are anticipated to be low to moderate for the northern option.	-3	Soft estuarine soils along the southern option will be susceptible to settlement requiring significant ground improvement and earthworks.
	Liquefaction and seismicity.	Stantec: **Attachment I1**	-2	Nelson airport is in an area of high seismicity although there are no known active faults under the site. The northern extension option extends into the Tahunanui Liquefaction Study area (Tonkin and Taylor 2013), the effects of which have been quantified in their report.	-2	Nelson airport is in an area of high seismicity although there are no known active faults under the site. The southern extension extends out of the study area however the extent and severity of liquefaction is likely to be of a similar nature.
	Ground Improvement	Stantec: **Attachment I1**	0	Limited ground improvement may be required if soils are loose or soft.	-3	The level of ground improvement for the southern option is likely to be significantly more extensive due to the presence of estuarine deposits.
	Level of Investigation and Design	Stantec: **Attachment I1**	1	Likely straightforward investigation and design	-3	The southern option is significantly more complex and would require a higher level of investigation and design than the northern option due to Waimea inlet and Jenkins Creek. These impacts will then require extensive consenting and environmental studies especially in relation to modifications to Jenkins Creek (for example in relation to flood capacity and potential impacts on the Waimea inlet.)
	Construction complexity.	Stantec: **Attachment I1**	0	Some earthworks cut and fill required including diversion of a drainage channel around the outside of the northern RESA.	-3	The southern extension would include a high level of construction complexity due to working in a tidal estuarine environment with likely soft soils prone to settlement requiring significant ground improvement. Jenkins Creek is assumed to be diverted through Point Road into Waimea inlet (adjacent to the southern RESA) which would require significant earthworks, possibly ground improvement, and a bridge under Point Road. This option would be both costly and time consuming to construct especially as marine construction requires specialised equipment.
	Other Natural Hazards	Stantec: **Attachment I1**	-1	The northern option is within the Civil Defence Tsunami Evacuation Zone	-2	Although both options are located within the Civil Defence Tsunami Evacuation Zones, slope instability and lateral spreading risk exists for the southern option realigned Jenkins Inlet and RESA.
	HAIL Sites	Stantec: **Attachment I1**	-1	Small area to the far northern extent. The northern extent extends into two HAIL sites: 10894 and 10087	0	None identified.
	Geo Coastal					
	Effects on Coastal Processes	Stantec: **Attachment I1**	0	Runway well setback from predicted shoreline erosion.	-1	Area already highly modified and contains revetments.

	Effect on urban flood risk	Stantec: **Attachment I1**	0	None to note. Stormwater treatment of runoff.	-2	Canalization of Jenkins Creek will require extensive bridging or diversion in order to minimise flooding upstream.
Total Economic / Feasibility			**11**		**-24**	
Environmental	**Ecology**					
	Vegetation and Habitat	Boffa Miskell **Attachment H1**	-1	Minor adverse effects expected, due to loss of 0.17 ha of indigenous dominated saltmarsh vegetation along Maire Stream tributary. This saltmarsh habitat is a natural wetland. Rank exotic grass habitats within eastern areas may provide habitat for skinks requiring surveys and management, if works are required in this area. However, these areas of habitat are within the existing NRMP DAA1 Designation so potential effects of the northern extension option on skinks have not been included in the MCA assessment. Ecological value: a small area of indigenous dominated saltmarsh vegetation along Maire Stream tributary is of Moderate ecological value; all other vegetation and terrestrial habitats within the northern extension are of Negligible ecological value. Magnitude of effect: the loss of saltmarsh vegetation equates to approximately 0.09% of this vegetation type in the ecological district, but a greater loss at the scale of the feature. The loss of other vegetation and terrestrial habitats will have a negligible magnitude of effect. Overall, the magnitude of effect has been assessed as a Low magnitude / minor shift (saltmarsh) to Negligible magnitude / very slight change (all other) from the existing baseline condition. Level of effect: Low (-1) (saltmarsh) to Very Low (0) (all other).	0	No significant adverse effects on vegetation and terrestrial habitats because all of the southern extension (not already designated as NAL-land) is entirely exotic grassland of Negligible Ecological Value. Land on Monaco Peninsula may provide habitat for skinks requiring surveys and management, if works are required in this area. However, Monaco Peninsula is within the existing NRMP DAA1 Designation, so potential effects of the southern extension option on skinks have not been included in the MCA assessment. Ecological value: all vegetation and terrestrial habitats within the southern extension are of Negligible ecological value. Magnitude of effect: the loss of these will result in a Negligible magnitude of effect / very slight change from existing baseline condition. Level of effect: Very Low (0).
	Freshwater	Boffa Miskell **Attachment H1**	-1	Minor adverse effect due to loss of c.475 m of freshwater habitat of Marie Stream tributary, which likely supports At Risk freshwater fish species and may be inanga spawning habitat. Potential minor adverse effect due to loss of ecological connection with the upstream 500 m of Maire Stream tributary. Ecological value: Maire Stream tributary (c.1000 m total, with c.475 m within Option A footprint), although modified (channelised with sub-optimal water and habitat quality) likely supports numerous At Risk freshwater fish species and may provide spawning habitat for inanga – High ecological value. Magnitude of effect: piping or infilling of Maire Stream tributary will result in the loss of c.475 m of freshwater habitat, which is c.0.7-1.4% of remaining coastal stream reaches (i.e., lower reaches of waterways within 1.5 km of the coast) at the Waimea Inlet scale; and c.7.7-16.2% habitat loss at the project scale. Due to loss of freshwater habitat, potential inanga spawning habitat, and an increase in impervious surfaces and contaminant inputs. Additionally, potential loss of ecological connectivity to a further c.500 m of upstream freshwater habitat, which may affect persistence of upstream populations of freshwater fishes. Equates to a Low magnitude of effect at the Waimea Inlet scale. At the project scale, the level of effect would be Low-High (loss of 7.7%-16.2% freshwater habitat). Level of effect: Low (-1)	0	No significant adverse effects on freshwater ecology, due to only minimal disturbance of riparian and in-stream habitats expected given bridging of Jenkins Creek. Ecological connectivity along Jenkins Creek expected to remain approximately similar to current state. Ecological value: Jenkins Creek supports numerous At Risk freshwater fish species, and inanga spawning habitat (upstream / outside of the airport's existing designation) – High ecological value. Magnitude of effect: bridging of Jenkins Creek may result in disturbance of riparian and in-stream habitats but the potential to create barriers to fish passage at the coastal interface is limited considering a bridge is proposed. Equates to a Negligible magnitude of effect. Level of effect: Very Low (0)

	Marine	Boffa Miskell **Attachment H1**	0	No significant adverse effects on marine ecology, assuming that discharges of sediment and contaminants into the CMA during both construction and operation of the runaway are avoided or minimised. Ecological value: the estuary area surrounding the golf course supports seagrass meadows and has sand-cobble substrates likely to support diverse infauna – High ecological value. Magnitude of effect: temporary indirect adverse effects during construction (sediment inputs) and operational effects (stormwater discharges) once the runway is completed. Equates to a Very Low / Negligible magnitude of effect. Level of effect: Very Low (0)	-2	Moderate adverse effect on marine ecology due to reclamation of 3.6 ha of estuary habitat. Direct disturbance during construction and permanent loss of estuary habitat. Ecological value: • The estuary area immediately surrounding Monaco Peninsula has high mud content. The seabed is not covered by vegetation / macroalgae No information is available about infaunal communities around the Monaco Peninsula, but sites with similar mud content elsewhere in the inlet have been shown to have moderate levels of macrofauna abundance, diversity and richness. Similarly, although no information is available about the level of sediment contamination around the Monaco Peninsula, sites with similar mud content have been shown to have benthic contaminant concentrations generally below guideline levels – Low-Moderate ecological value. • However, the wider Waimea Inlet presents a diversity of benthic habitats (which include meadows of the At Risk – Declining seagrass Zostera muelleri as well as rare biogenic habitats in estuarine contexts such as sponge gardens) and is an important nursery and feeding ground for many species of coastal fish – High ecological value. Magnitude of effect: permanent habitat loss of 3.6 ha of intertidal habitat of moderate ecological value due to reclamation, plus additional loss of habitat due to piles for bridging Jenkins Creek, as well as indirect effects during construction (e.g., temporary excavation of the seabed and sediment inputs). • At the scale of the Project: loss of intertidal habitat from c.20 ha of similar intertidal habitat across the two embayments north and south of Monaco Peninsula, equates to 18% of habitat lost. This equates to a Moderate magnitude of effect. • At the scale of the Waimea Inlet: loss of intertidal habitat from c.2,800 ha of similar intertidal habitat of the Inlet, equates to 0.13% of habitat lost. Taking cumulative effects due to ongoing modification and loss of marine habitats, this equates to a Moderate magnitude of effect. Level of effect: Moderate (-2) at the project scale; Moderate (-2) at the Waimea Inlet scale
	Avifauna	Boffa Miskell **Attachment H1**	-1	Minor adverse effects on avifauna species due to permanent loss of foraging and roosting habitats and increased disturbance of coastal species. Ecological value: • Terrestrial avifauna largely comprised of native Not Threatened (Low ecological value) and Introduced species (Very Low ecological value); but New Zealand pipit (At Risk; High ecological value) and bush falcon (Threatened, Very High ecological value). • Freshwater avifauna included At Risk species (High ecological value). • Coastal habitats support numerous Threatened (Very High) and At Risk species (High ecological value). Magnitude of effect: At the scale of the Waimea Inlet: • Terrestrial: permanent loss of foraging and roosting for terrestrial native Not Threatened and Introduced species, as well as for NZ pipit and bush falcon – Negligible magnitude of effect. • Freshwater: no breeding habitat for freshwater species within the extension footprint, and species recorded were traversing the site – Negligible magnitude of effect • Coastal: no direct loss impact on coastal environment, but potential additional disturbance of coastal avifauna communities that are already subject to high levels of disturbance from current activities – Negligible magnitude of effect. Level of effect: • Terrestrial: Very Low (0) for Not Threatened and Introduced species; Very Low (0) for NZ pipit; Low (-1) for bush falcon. • Freshwater: Very Low (0) • Coastal: Very Low (0) to Low (-1)	-2	Moderate adverse effect due to reclamation of 3.6 ha of estuary habitat, which provides foraging habitat for Threatened and At Risk coastal avifauna species, as well as permanent loss of foraging and roosting habitat for various terrestrial species. Ecological value: • Terrestrial avifauna largely comprised of native Not Threatened (Low ecological value) and Introduced species (Very Low ecological value); but New Zealand pipit (At Risk; High ecological value) and bush falcon (Threatened, Very High ecological value). • Coastal habitats support numerous Threatened (Very High) and At Risk species (High ecological value). Magnitude of effect: At the scale of the Waimea Inlet: • Terrestrial: permanent loss of foraging and roosting for terrestrial native Not Threatened and Introduced species, as well as for NZ pipit and bush falcon – Negligible magnitude of effect. • Coastal: permanent loss of foraging habitat for a number of Threatened and At Risk species, but there does not appear to be breeding habitat available for these species within Option B footprint. If banded rail are breeding in Jenkins Creek saltmarsh habitat, they would be subject to a higher level of disturbance than currently exposed to – Low magnitude of effect. Level of effect: • Terrestrial: Very Low (0) for Not Threatened and Introduced species; Very Low (0) for NZ pipit; Low (-1) for bush falcon. • Coastal: Moderate (-2) to Low (-1)
	Landscape					

	Natural Character	Boffa Miskell **Attachment J1.**	-1	The flat nature of the topography aids in absorbing the horizontal form of the runway extension and airport operations already form part of the existing environment. The natural character is that of a highly modified environment located within a coastal context	-2	natural character and visual amenity values that are recognised at a national level (Waimea Estuary) as well at a district scale that will be adversely affected by the southern runway extension.
	Landscape (Physical and Character)	Boffa Miskell **Attachment J1.**	-1	Will generally be in character with the flat, open grassland apparent at the golf course aside from earthworks to remove 'sand-dune' type landforms. The physical landscape will be slightly altered through an increase in pavement and realignment of the Maire Stream tributary. Existing recreational opportunities will need to be adapted to a northern runway extension	-3	The southern extent of the Option B extension area will require a substantial amount of earthworks to create the approximate 3.6ha area of land reclamation needed for the southern RESA. The introduction of a bridge across Jenkins Creek and tunnel structure for Point Road will further alter the existing physical landscape that varies from a sandy mudflat at low tide to a full water body at high tide. The legibility of the Monaco Peninsula will also be compromised.
	Visual Effects	Boffa Miskell **Attachment J1.**		The visual catchment is generally contained to the localised area and there are more options to provide mitigation in order to lower the overall level of effects		Has a wide visual catchment, which would affect a wider viewing audience, ranging from private dwellings, recreational users of walking/cycling tracks, road users of Point Road and water users of Jenkins Creek/Waimea Estuary. The visual catchment is generally contained to the localised area
	Northern					
	Public		-1		-1	
	Private		-1		-1	
	Eastern					
	Private (adjoining)		-2		-2	
	Private (further afield)		0		-1	
	Public		0		-2	
	Southern					
	Private (adjoining)		0		-	
	Private (further afield)		-		-	
	Public		0		-2	
	Western					
	Private (adjoining)		-		-3	
	Public		0		-2	
Total Environmental			**-9**		**-23**	

Social / Cultural	**Archaeology**					
	Archaeology	Underground Overground - **Attachment G1.**	-3	Aerial imagery from 1948 shows the fenced off Nelson Airport site at this time, which has been extensively levelled and includes the reclaimed Waimea Inlet tidal flats. There is a low potential for pre-1900 archaeological sites to be present in this area, and it is likely that any sites that do remain are likely to be in a disturbed state. There is a low probability of affecting archaeological sites, however, if a site was encountered there would be a permanent and major to significant adverse effect, depending on the values of the site type that is found. **In summary, the MCA identifies that, <u>without mitigation</u>, both runway extension options have the potential to significantly adversely affect archaeological values (if an archaeological site is present within the development area). However, from an archaeological perspective, Option A is preferred over Option B because there is a low probability of affecting archaeological sites and the potential to adversely impact archaeological sites is significantly greater for Option B**.	-3	There is a high potential that unrecorded archaeological sites associated with Māori occupation exist both within and in close proximity to the southern option for runway extension. In particular, those areas that have remained relatively undeveloped, such as the inlet foreshore and intertidal zone to the south of the airport. The southern option would result in a permanent, significant adverse effect.

	Historic Heritage	Underground Overground **Attachment G1.**	-2	The two scheduled buildings within the broader NAL site, will not be affected by the northern option, however, there are historic heritage values associated with the use of this area as a WWII Airforce base. Structures associated with these activities are likely to be affected by the northern runway extension, resulting in a permanent moderate-major adverse effect.	0	Sites of historic heritage value will be unaffected by Option B
	Acoustics					
	Annoyance	Marshall Day Acoustics **Attachment K1.**	-2	Both of the runway extension options result in a large number of people predicted to be highly annoyed by aircraft noise with slightly more affected by the northern extension option, particularly in the >65 (dB Ldn) range. The effects can be partially mitigated by acoustically insulating dwellings, however the impact on outdoor living cannot be mitigated.	-2	Both of the runway extension options result in a large number of people predicted to be highly annoyed by aircraft noise with slightly more affected by the northern extension option, particularly in the >65 (dB Ldn) range. The effects can be partially mitigated by acoustically insulating dwellings, however the impact on outdoor living cannot be mitigated.
	Increase in single event noise	Marshall Day Acoustics **Attachment K1.**	-3	The change in single event noise for arrivals is predicted to be ≤ 2 dB LAE for both runway options. For departures this option results in a large number of houses experiencing a significant or substantial increase in single event level for departures	-2	The change in single event noise for arrivals is predicted to be ≤ 2 dB LAE for both runway options. For departures southern extension option results in a small number of houses experiencing an appreciable or significant increase in single event level for departures.
	Houses with $L_{AE} \geq 95$ dB	Marshall Day Acoustics **Attachment K1.**	-2	For arrivals, both runway options show an appreciable number of houses experiencing 'noisy events' which is similar to the current situation. The northern option affects slightly more houses, but the difference is not significant.	-2	For arrivals, both runway options show an appreciable number of houses experiencing 'noisy events' which is similar to the current situation. The northern option affects slightly more houses, but the difference is not significant.
	Houses inside contours (55, 60, 65 dB Ldn)	Marshall Day Acoustics **Attachment K1.**	-3	Overall, future aircraft noise around Nelson Airport is predicted to affect fewer houses compared with the operative NRMP boundaries due to a quieter modern aircraft fleet. There is only a marginal difference in the total number of houses affected by the southern and northern runway extension options, (605 houses compared with 624 houses) however the northern option has appreciably more houses in the > 65 dB Ldn band where aircraft noise effects are significant.	-2	Overall, future aircraft noise around Nelson Airport is predicted to affect fewer houses compared with the operative NRMP boundaries due to a quieter modern aircraft fleet. There is only a marginal difference in the total number of houses affected by the southern and northern runway extension options, (605 houses compared with 624 houses) however the northern option has appreciably more houses in the > 65 dB Ldn band where aircraft noise effects are significant.
	Recreation					
	Nelson Golf Club	Scored by Planz	-2	Encroachment of RESA and runway removes Hole No's 1, 9, 10 and 18 and severs the Club House from the facility. Likely reconfiguration would not prevent Golf Club but offering would be more limited (9 / 12 hole course).	-1	Encroachment of RESA requires reconfiguration of holes, but unlikely to prevent provision of an 18 hole course. Club House not severed from course.
	Access to CMA / Perimeter Walk	Scored by Planz	-1	Need for a reconfiguration of the Perimeter Walk inland around Nelson Golf Club (noting under NAL control and management). No material change to CMA access.	-2	Considerable restrictions associated with encroachment into CMA and need to provide access across Point Road. Likely impediments to access to current area of the CMA.
Total Social			**-18**		**-14**	
Totals			**-16**		**-61**	

	Option A – Northern Option	Option B – Southern Option
Weighting Options		
Option 1 – Equal Weighting (All topics and criteria given equal weighting - each criteria multiplied by 33)	-528	**-2013**
Option 1A – Economic Weighting (Economic and feasibility topic and criteria multiplied by 60, Social and Environmental criteria multiplied by 20 respectively)	30	**-2250**
Option 1B – Social and Environmental Weighting (Economic and feasibility topic and criteria multiplied by 25, Social and Environmental criteria multiplied by 37.5 respectively)	-632.5	-1882.5
Option 2 – Aggregate weighting. Scores are averaged across each Topic, regardless of the number of criteria within each Topic.	-2.44	**-4.61**
Option 2A – Aggregate Environmental / Social Weighting. Scores are averaged across each Topic, regardless of the number of criteria within each Topic. Environmental and Social Topics are afforded a 200% weighting.	-5.38	**-8.13**