1 Expert Panel: s67 comments (Minute 4 dated 17 September 2025)

Table 1.1: Expert Panel comment summary and applicant response

Response prepared by Ecology experts Chris Wedding, Treff Barnett and Jennifer Shanks, with input from the Applicant and Groundwater expert Parvis Namjou (on groundwater matters).

Response No.	Specialism	Comment summary	Applicant response
2	**Ecology**	1. The development of the Haul Road and Stage 1 works will involve the diversion of Stream 4 lower. The Panel understands that the upstream reaches of Stream 4 and its tributaries may remain intact for up to 40 years and currently support native freshwater fish and fish habitat; therefore, maintaining connectivity to upstream habitat for native fish should be considered: a. What length is proposed to be piped/ culverted? b. Is passage for native fish proposed to be maintained, and if so, how? c. Please provide a drawing of the culvert in long section and cross section, illustrating how the native fish passage provisions of clause 70(2) of the National Environmental Standards for Freshwater (NES-F) will be provided for, if that is the intention.	The existing twin culvert is approximately 10 m in length and only provides fish passage for climbing capable species (i.e., potentially juvenile eels and banded kōkopu) and only occasional native eels have been recorded above the waterfall (including trapping and eDNA sampling). This is because the large downstream waterfall currently forms a natural barrier to further fish passage accessing the upper catchment. The proposed culvert is expected to be around 40 m in length, although detailed design and final drawings are not yet available. Under Condition 60, a Sutton Block Stream Diversion and Enhancement Plan (SDEP) must be prepared to set out construction and riparian planting for the new stream diversion (NT 1 Stream, Drury Site). The SDEP must include details on the culvert design, which must be a stream simulation culvert that includes natural streambed, and is sized to provide for natural hydraulic and ecological processes, including fish passage. As detailed in Table 8.3 of the AEE report, consent is sought under Regulation 71(1) of the NES-F as a Discretionary Activity. Although the culvert will be designed to provide fish passage, the specifications will not be confirmed until detailed design phase. Consent is therefore sought on the basis that the permitted activity standards cannot be meet.
		2. Will there be any instances whereby the proposed application works will require the removal or displacement of ecological enhancement works authorised under an existing consent? If there are (for example downstream of the existing pond within the haul road alignment), please provide: a. a description of the extent and ecological status of those areas, and a map illustrating the location; and b. an explanation of how the loss of existing and future ecological values from previously consented and required ecological enhancements will be addressed.	The application will not result in the removal or displacement of ecological enhancement works authorised under any existing consents. For the ecological enhancement works located downstream of the existing pond (within the haul road alignment) associated with the Northern Expansion of the Drury Quarry, the Applicant sought a variation to Consent BUN60325729 (LUC60325732-A & LUS60325733-A) to relocate the originally consented offset area to a site downstream of Stream 4 and terrestrial planting to adjoin Kaareara paa. This variation was approved by Auckland Council on 3 April 2025. The consented terrestrial and freshwater offset areas are separate from the Sutton Block ecological offset package; in other words, there is no overlap or 'double counting' between the two.
		3. How does the effects management package address the loss of potential habitat for bittern, pipit and long-tailed bats (identified as species that could potentially use parts of the Sutton Block)?	Survey work confirmed the presence of New Zealand pipit (Anthus novaeseelandiae, At Risk–Declining) within the Sutton Block, while Australasian bittern (Botaurus poiciloptilus, Threatened–Nationally Critical) were not detected (EMP, Table 11) and long-tailed bats (Chalinolobus tuberculatus, Threatened–Nationally Critical) were also not recorded, but may occur in the wider landscape (Figure 10, EMP). **Species-level details and effects management measures:** • **Pipit:** Works will be timed to avoid peak breeding (August–February), nest checks undertaken by a SQEP, and 10 m exclusion buffers established around active nests (EMP, Section 6.3.3). Pipits were only seen once in the Project area (an anecdotal observation). Their habitat proposed to be removed is low-quality habitat (grazed pasture), which is abundant within the local and wider landscape. Therefore, impacts on this species are not expected to result in any significant residual effects. • **Bittern:** Bittern were not detected within the wetlands of the Sutton Block site. However, it is acknowledged that they are a highly mobile species (NPS-IB) and may only use this site fleetingly. • **Long-tailed bats:** Pre-felling inspections will be carried out for all large trees with potential roost features, staged felling undertaken under ecologist supervision, and application of DOC's Bat Roost Protocol (EMP, Figure 13). Where roosts are found, six artificial roost boxes (Kent, Schwegler, or equivalent; EMP, Section 7.4.6) will be installed per roost lost. **Offsetting and compensation measures:** No specific residual effects are anticipated for these species, so no targeted offsetting or compensation is proposed. However, the existing offsetting measures will still provide wider biodiversity benefits, even if they are not targeted to these species. Forest enhancement and revegetation (62.3 ha of native revegetation and 108 ha of pest-controlled forest enhancement), will support long-term habitat for long-tailed bats (REAR-TE, Tables 15,

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			42–50). Bittern will also gain habitat benefits from the wetland offsetting and enhancement measures (18,758 m² to be offset with 4.07 ha new wetlands; REAR-SW, Table 5; NGDP:WP, Figure 4), which will provide an increase in suitable long-term habitat.
		4. Rock forest is an endangered forest type and the loss of even small amounts is acknowledged (in the application material) to constitute a very high level of adverse effect. The purpose of Phases 3-5 strip areas – which include removal of the rock forest - is unclear, as this area does not appear to serve a purpose for the haul road or other infrastructure, and appears to contribute a very small area of extractable aggregate. Please: a. explain why loss of the rock forest on the north-west side of the existing pond cannot, or is not proposed to, be avoided; and b. clarify the importance of the Phase 3-5 stripping area to the application.	The ESCD Phases 1–9 outline the progressive stripping of overburden (topsoil) to access the underlying aggregate resource. Once stripped, these areas become part of the quarry footprint. With respect to the rock forest, this area lies within the footprint of the Stage 1 pit. It could not be avoided due to a combination spatial and safety constraints. The quarry pit requires a minimum working width to achieve safe benching standards. The location of the rock forest coincides with the narrowest part of the Sutton Block footprint, and the most practicable location to connect the existing Drury Pit with the proposed Sutton Block pit. While other connection points were considered, this location provides for operational efficiency and, critically, results in reduced loss of stream and wetland areas compared with alternatives. Other site constraints considered when designing the pit footprint are set out in Appendix F – Consultation Documentation - Iwi Engagement overview. In summary, these included: • avoidance of the archaeological sites located to the northwest; • locating the Quarry access in a location that results in minimal stream and wetland reclamation, avoids Kaarearea Paa, and appropriate set-backs from Kaarearea Paa maintained; and • requirement to stage the pit in a way that achieves quarry safety and operational efficiency. The area of rock forest to be lost is approximately 0.65ha and is of poor ecological integrity due to degradation caused by fragmentation and long-term grazing by livestock. These effects have resulted in very severe ecosystem disruption and loss of plant functional types [1]. There is no understorey or groundcover tiers, and the canopy is depleted. It supports a restricted range of species compared to the reference site at Kaarearea Paa which has been fenced off and protected by the applicant for more than 15 years. Rock forest offset planting will occur adjacent to the western side of Kaarearea Paa, directly opposite the impact site.
		5. It is unclear how the site water diversion (new piped flow) into the existing quarry treatment system will maintain flow in the lower part of Stream 4 between the existing pond and the existing infrastructure that serves the current Drury Quarry Pit. The Ecological Impact Assessment refers to a 'diversion' occurring in this location; however, other parts of the application documents refer instead to the potential for dewatering to occur. Please clarify how the lower section of Stream 4 below the existing pond is proposed to be managed throughout the life of quarry.	The proposed quarry construction and ancillary works will result in the permanent diversion of approximately 115 linear metres of Stream 4 (NT1) below the existing dam pond. During construction, temporary channelisation while will be required (e.g., Stream 4a lower will be channelled while a new culvert is installed). Once the permanent diversion is complete, 128 m of Stream 4 located within the footprint of the existing manmade pond will be restored within the first three years of operation. The downstream end of this permanent diversion will be designed to tie into the existing stream (refer to Pit Plan – 3 Year (indicative), Sutton Pit Water Management, drawing ESCP-Sutton Blk – H20). From Stage 2 onwards (3+ years), flows in the lower sections of Stream 4 will be maintained through the following measures: • **Permanent diversion channel:** Flows from the upper Stream 4 catchment will be directed into the new diversion channel. • **Flow augmentation**: Clean pit water will be pumped to maintain baseline flows. From Stage 1, the clean pit water pump line is proposed to discharge to the new permanent stream diversion channel. As the pit expands, the augmentation point will be shifted further upstream on Stream 4 to ensure baseline flows are maintained as drawdown extents are predicted to increase. • **Dirty water management:** 1. Left to settle in the Sutton Block pit and once below a certain turbidity threshold (100NTU) discharged as clean water to the Stream 4 (NT1); or 2. Pumped and integrated into the Drury Quarry Water Management and sent to the Lamella for processing before being discharged to the lower reaches of NT1 stream.
		6. Please provide a long section and cross sections of the new stream diversion proposed for Stream 4 (the new temporary stream channel along the true left bank of the pond, and along the true right bank below the existing culvert crossing point) to demonstrate '*a naturalised channel with meanders,*	Detailed design of the stream diversion proposed for Steam 4 has not yet been undertaken, so long sections or cross sections are currently not available. As outlined in our response to Row 1, proposed Condition 60 requires the preparation of a SDEP. The SDEP is to be designed collaboratively with the Project engineers and the Project ecologists and is required to set out construction methods, timing, and riparian planting for the new diversion (NT

[1] **Holdaway RJ, Wiser SK, Williams PA 2012.** Status assessment of New Zealand's naturally uncommon ecosystems. *Conserv Biol*. 2012;26(4):619-629. doi:10.1111/j.1523-1739.2012.01868.x

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		variations in hydrology and large boulders, similar to the current stream reach, with no loss in current SEV values or stream length' as stated in Section 5.3.3 of the Ecological Impact Assessment.	1 Stream, Drury Site). It will also include detailed design drawings with profiles showing the diversion alignment, low-flow channel and meanders, and ecological enhancements such as riffles, pools, and boulders to provide hydrologic variation.
		7. Please provide an assessment of the percentage of the Sutton Block catchment that will be affected by the application works, and the predicted reduction in flows (without augmentation) to Stream 4.	Approximately >80% of the upper Sutton Block catchment of Stream 4 will be affected by the works, and in the absence of augmentation, this would equate to a predicted reduction in baseflow of about 1.79 L/s. The existing Mean Annual Low Flow (MALF) for Stream 4 (NT1-1) is 1.79 L/s/km² (PDP, 2025; p. 35, Table 7). The upper catchment above the man-made dam (pond) is about 1 km², and the majority of this catchment will become part of the future pit (Stage 5), representing most of the entire upper catchment within the Sutton Block. Without augmentation, the corresponding reduction in baseflow to Stream 4 would therefore be approximately 1.79 L/s. However, sump water collected during pit operations will include both shallow groundwater from the upper catchment and regional groundwater inputs from surrounding catchments. As a result, downstream flows will be maintained via sump pumping, which will discharge directly back to Stream 4. Accordingly, once sump discharge to Stream 4 commences (proposed as part of Stage 1 – from year 3 onwards), no net reduction in Stream 4 flows is expected. Prior to year 3 (e.g., Phases 8 and 9), the proposed culvert and permanent stream diversion along Stream 4 will be in place, and there will be no material reduction in Stream 4 upper catchment. Refer to ESCP sheet 19 "Pit Plan 3- Year (Indicative) - Sutton Pit Water Management attached to Technical Report R.
		8. Augmentation of Stream 4 by adding water is referred to. Where will this water originate from, and what is the anticipated quality upon discharge to the stream?	The augmentation water for Stream 4 will be sourced from the pit sump, which collects both shallow groundwater from the excavated catchment and regional groundwater. The sump therefore functions as a replacement for the existing upper catchment of Stream 4. Prior to augmentation commencing (initially proposed near the existing upper pond and downstream of the future pit), the water must be tested and confirmed as suitable by a freshwater ecologist (refer to Condition 154). As the inflow is primarily groundwater that would naturally discharge to the stream under existing conditions, no deterioration in the current water quality of Stream 4 is expected. Refer to Conditions 143 –154.
		9. What are the values of the intermittent stream into which Stream 9 discharges ('northern stream')? What is the assessed risk of loss of aquatic values to this stream from the removal of Stream 9 and the catchment of this northern stream due to the development of the Sutton Block pit?	The stream into which Stream 9 discharges (the 'northern stream') is assessed as having moderate to high ecological value. It is located in bush (mainly native vegetation with some exotics) and is fed by flows from streams located outside of the catchment for the Stage 5 pit footprint. In contrast, Stream 9 is intermittent stream of low ecological value. It has been modified by rotational harvesting of pine and only flows during winter months. As such, the removal of Stream 9 and its small catchment is not expected to pose a significant risk to the aquatic values of the northern stream.
		10. The Ecological Impact Assessment report includes an assessment of the direct effects of the application on stream, wetlands, habitat, and vegetation types. The potential for indirect edge effects has also been highlighted. How has the potential for dewatering to affect streams, wetlands, indigenous vegetation and the habitats of native fauna been included in the assessment of the effects on the environment?	The indirect effects of potential dewatering of streams and wetlands are addressed in Section 5.3.7 and Table 59 of the EcIA, and with the proposed monitoring and augmentation of Stream 4, as described above. To mitigate potential indirect effects on the adjacent streams and wetlands, riparian planting is proposed for the remaining reach of Stream 2, all of Stream 4 adjacent to the boundary; the bulk of Wetland 2a; all of Wetland 2b; Stream 3 and its small headwater wetland and Wetland 8. Refer to the response at Row 13 below and the Applicant's response to Row 51 in *"AC Queries – Comment Tracker Table 17 September"* provided to the Panel on 17 September, regarding potential drawdown effects on groundwater and associated effects on retained streams, wetlands, and existing and proposed native vegetation and habitats surrounding the pit. In short, augmentation is proposed where there is potential for drawdown on streams or wetlands to the south of the pit. No other indirect effects are expected on indigenous terrestrial vegetation.
		11. Table 56 of the Ecological Impact Assessment states that multiple artificial roosts will be provided for any single bat roost discovered. How many artificial roosts will be provided for each bat roost discovered? Does a bat roost constitute a potential bat roost, or one that is actually in use – and how is that proposed to be determined?	Artificial roosts will be provided at a ratio of 6:1 for each confirmed natural bat roost impacted by quarry activities (EMP, Section 7.4.6). A "roost" is defined as any confirmed active or inactive long-tailed bat roost located during pre-clearance surveys or tree felling works. Inactive roosts are those that have previously been used but are not currently in use. These roosts are difficult to identify, but the usual indicators include the presence of guano within the roost, or staining on the outside of the tree. Potential bat roosts (i.e., suitable cavities that have not been used) will not be included, due to the low rate of bat detections within the quarry site.

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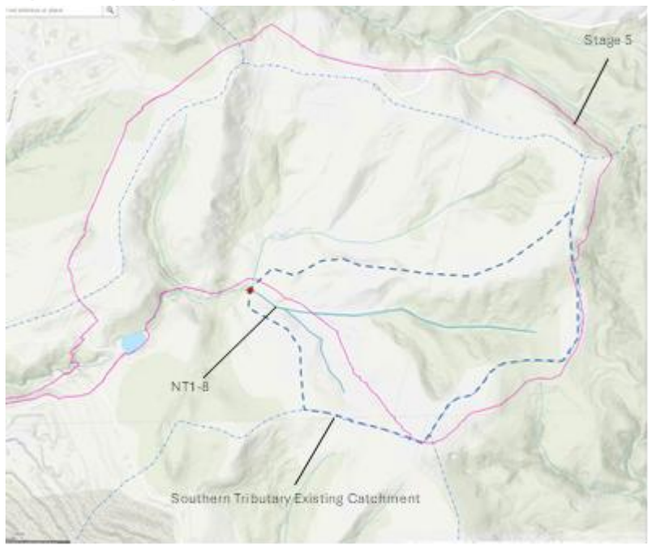
			Detailed information about this process is provided within the Ecological Management Plan (EMP), which includes: • Roost identification via automatic bat monitors (ABMs) and ecologist inspection prior to felling (EMP, Section 7.4; Figure 12). • If a roost is identified, tree removal will be delayed until bats vacate, with consultation undertaken with Auckland Council and DOC. • Roost replacement: Installation of artificial bat boxes (Kent, Schwegler 2FN, and locally trialled timber designs; EMP, Figure 14). Any additional updated information from the Department of Conservation regarding artificial bat roosts will be implemented. • Monitoring and contingencies: Roost boxes will be monitored annually for occupancy. If uptake is low after 3–5 years, supplementary boxes will be installed and/or locations adjusted (EMP, Section 7.4). This approach aligns with DOC's Bat Roost Protocol (October 2024) and the associated artificial bat roost advice note, both of which provide an adaptive management framework to ensure functional roosting opportunities are maintained.
		12. From Stage 1: Phase 8 onwards, all work area site runoff will be directed back to the Drury Quarry Pit for treatment. SRP 1 will no longer exist and catchment flow from the increasing Sutton Pit works area will be diverted from Stream 4 to the Drury Quarry Pit. What would be the actual and potential effects of decreasing flow into the lower part of Stream 4, and how are those effects proposed to be managed?	Refer to our response at Row 7. In summary, from year 3 onwards (Stage 1) once the pit expansion is of a reasonable size, and will result in a partial reduction of Stream 4 (NT1) catchment, it is proposed to discharge clean sump water back into Stream 4 to mitigate any reduction in stream base flows.
		13. The Ground and Surface Water Assessment states that '[s]hallow groundwater within, and in the vicinity of, the Sutton Block expansion area is expected to be affected by the proposed quarry' and that *'[f]or the purposes of assessing the amount of resource potentially affected, the ridgelines of adjacent gullies have been taken as flow divides in the shallow groundwater resource*'. The Ecological Impact Assessment does not include an assessment of the effects of drawdown of shallow groundwater on wetlands or streams adjoining the pit, or on adjoining catchments. Please provide: a. an ecological assessment of potential adverse effects of shallow groundwater reduction; and b. a map showing the predicted extent of drawdown indirect impacts on wetlands and streams.	As stated in Section 4.3.3 of Technical Report L, pit excavation (not dewatering) may intercept shallow groundwater immediately adjacent to the pit wall, and predominantly along the pit's southern extent. Any shallow water intercepted by the pit excavation is assumed to contribute to the total inflow into the pit sump that is proposed to be used to augment the NT1 Stream (Stream 4). In other areas (north, east and west of the footprint) the pit reaches the ridge line and in these areas no effects on the shallow groundwater in the vicinity pit footprint is expected. Currently, shallow groundwater south of the pit maintains the southern tributary (NT1-8) Mean Annual Low Flow (MALF). After Stage 3, when the pit intercepts this part of the catchment, the stream MALF will be reduced. To mitigate this, stream augmentation is proposed to maintain existing low flow conditions, ensuring no change to baseflow or soil moisture on wetlands or streams adjoining the southern boundary of the pit. It is proposed to maintain the pre-quarry baseflow (MALF) at NT1-8 through augmentation. The volume for this augmentation (Stage 5) is 38m3/d (PDP 2025). 

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			A plan showing the existing Southern Tributary catchment, that is proposed to be augmented to maintain stream low flows, following quarry development. Also refer to the response provided at Row 51 in *"AC Queries – Comment Tracker Table 17 September"* the Applicant provided to the Panel on 17 September.
		14. The Ground and Surface Water Assessment discusses the potential effects of regional groundwater changes due to the project on the base flow of local streams. Loss of flow is predicted for the Maketu Stream, Hays and Symonds Stream, Hingaia Stream, Mangawheau Stream, and the Wairoa Stream. Please provide an assessment of the ecological importance of this loss of flows.	Stream base flows are proposed to be maintained via augmentation, and as such no reduction of stream baseflows is expected. Stream flow monitoring is proposed to be undertaken as part of the consent conditions, along with a flow maintenance and recommended augmentation programme for all potentially impacted streams (refer to Conditions 143 -168). Augmentation water will be sourced either from clean sump water collected during quarry operations or from the dedicated groundwater supply well next to the affected streams.
		15. If augmentation is proposed to increase stream flows where drawdown may be expected, please confirm whether consents have been applied for groundwater takes and discharges to resolve this, including within streams where flow reduction is considered unlikely, but which may experience loss.	Yes, consent is sought for the take, use, and diversion of groundwater, as outlined in Section 8, Table 8.2 of the AEE. The maximum volume applied for is 19,426 m^3 per day at the Stage 5 Life of Quarry extent. These volumes have been calculated conservatively to account for potential groundwater drawdowns, including scenarios considered unlikely to occur. It is noted that Auckland Council planners, as well as both groundwater and surface water experts, have reviewed the application and agreed with the rationale for the volumes and the consents sought.
		16. The loss of shallow groundwater and regional groundwater from the NT1 catchment is proposed to be resolved by treating the water derived from the Sutton Pit works and discharging it upstream of the NT1-8 station along the Southern Tributary. Where is NT1-8 relative to the Sutton Pit sump? Please explain how this process will avoid the risk of the project dewatering the lower reaches of Stream 4.	As noted in Row 13, only a small portion of the sump inflow will be required to maintain NT1-8 (Southern Tributary) from Stage 4 onwards, once the pit extends eastward. The remaining inflow will be discharged back to the stream downstream of the existing man-made pond "upper lake" (lower reaches of Stream 4). As outlined in Row 7, the sump will contain not only the current shallow groundwater in NT1 catchment (in the vicinity of the sump) but also regional groundwater from the neighbouring catchments (sourced from the regional groundwater zone of influence). Therefore, no loss of stream flow downstream of the sump is expected.
		17. At the cessation of quarrying (ca 50 years), how are the pre-quarrying flows into Stream 4 proposed to be restored or maintained in the long term? The application material discusses augmentation of flow during quarrying, but does not discuss if flows to maintain Stream 4 will require augmentation after closure of the Sutton Block pit.	Refer to Conditions 164 -167, which require a land covenant to be prepared requiring augmentation of NT1-8 Tributary (which includes stream 4) for so long as dewatering activities occur within the Site that reduced groundwater levels below RL 60 (existing groundwater levels). Following any future rehabilitation, the groundwater level will rise (without any requirement for pumping/dewatering) and this result will result in reestablishment of the pre-quarry groundwater contributions to the streams (baseflow) including Stream 4.
		18. Table 52 of the Ecological Impact Assessment lists 'Parameters of wetlands impacted by the Sutton Block pit expansion area'. The wetlands listed in that table sum to 24,036 m^2, yet the sum communicated in the total for anticipated wetland loss is only 18,758m^2. Please explain the discrepancy.	24,036m^2 is the total area impacted or potentially impact through loss (reclamation) + loss of catchment + no direct effects. From Table 52, Wetland loss is 18,758m^2, plus loss of catchment (4,854m^2), plus no direct effects (424m^2) equals 24,036m^2
		19. How has the potential for indirect adverse effects on wetlands and streams been incorporated into the summed total of impacted features?	Yes, refer to response to row 10 above.
		20. The Geotechnical Assessment Report notes that the slope stability analysis for inter-bench slopes is preliminary, and that *'instability may occur under assumed material parameters if the slopes were to become completely saturated*'. Some of those slopes are located through or in close proximity to wetlands and streams along the southern pit shell. The Geotechnical Assessment Report seems to advocate for laying back the batters flatter from the design proposed by Terra Mining to achieve a satisfactory safety factor. How has the risk of slope instability and the potential need for a greater extent of drainage/ earthworks along this southern boundary been incorporated into the ecological effects assessment with respect to the potential loss of streams and wetlands?	The risk of slope instability along the southern pit shell, and implications for adjoining wetlands and streams, have been addressed in the Geotechnical Assessment (Sections 14.3.10 and 15.3) and EcIA (Section 5.37.7). Groundwater monitoring and monitoring-led management are required under consent conditions (Conditions 30–31, Slope Stability Management Plan), with engineering options identified in Section 15.3 of the Geotechnical Report manage potential drawdown effects from pit excavation near wetlands and streams. Key measures set out in conditions include: • Groundwater monitoring: Installation of piezometers at the start of excavation to determine connectivity between southern wetlands and the pit, allowing refinement of slope stability modelling. • Monitoring-led management: Annual stability reviews (minimum) to ensure ongoing assessment of slope design performance and suitable geotechnical parameters, use of trial batters, geotechnical inspections, and defined "hold-points" in excavation to ensure slope design responds to monitoring results. Where groundwater interactions may risk stability or wetland function, engineered barriers or pit setbacks will be considered.

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			• Wetland and stream protection: Pit design avoids significant drawdown of wetlands; Wetland 2a South retains most of its contributing catchment and continues to discharge to Wetland 2b and Stream 2, preserving permanent hydrological conditions. • Contingency measures: Ongoing water-level monitoring, with augmentation (of water flows into the wetlands) implemented if wetland levels decline during later pit stages. • Ecological mitigation: Native riparian planting along retained Stream 4, Wetland 2a South margins, and other priority habitats. Augmentation of NT-8 also provides for baseflow support to associated wetlands. On this basis, the EcIA concludes that potential adverse effects on freshwater systems are moderate prior to mitigation, and reduce to low with the proposed staged monitoring, monitoring-led management, and ecological mitigation.
		21. The Residual Effects Analysis Report: Streams and Wetlands, and the Net Gain Delivery Plans for Wetland Planting, and Riparian Planting are predicated on the scale of loss of streams and wetlands due to the project, with the type of loss being constrained to 'direct effects'. How have indirect effects (in particular dewatering effects and slope instability response effects) been incorporated into these calculations?	Refer to response to Rows 10 and 13 above.
		22. The stream offset proposed incorporates the use of the SEV method with the enhancement of streams within SAL land and land at Tuakau, which will result in at least 3,341 m linear meters of stream restoration (that is, enhancement of existing values). The Panel notes National Policy Statement for Freshwater Management (**NPS:FM**) objectives that the loss of river (stream) extent and values is avoided to the extent practicable, and that an aquatic offset requires no net loss (and preferably a net gain) in the extent and values of a wetland or stream. The Panel understands that the effects management approach proposed here is to offset the loss of streams. Please provide further explanation as to how the proposed stream restoration programme: a. replaces the loss of stream extent; and b. otherwise meets (or addresses) the requirements of aquatic offsetting in Appendix 6 of the NPS:FM.	Refer to Attachment D – Memorandum addressing the ecology comments (Items 55 and 59: values and extent) dated 17 September and provided to the Panel on 17 September by the Applicant. Also refer to Attachment E – Legal memorandum to address ecology queries dated 17 September 2025 and provided to the Panel on 17 September by the Applicant. Refer to Section 7 and Table 18 "Assessment against the Principle of Aquatic Offsetting" in the E5:9 REAR: Stream and Wetland Loss report.
		23. In regard to the proposed wetland offset site at Tuakau, how much of the area proposed as wetland offset is already natural inland wetland? The photographs of the site included in the Residual Effects Analysis Report: Streams and Wetlands appear to show most is already wetland. Please provide a map showing which parts meet the definition of a natural inland wetland and which parts do not (and why not).	 The photographs in the Residual Effects Analysis Report: Streams and Wetlands (E5:9 REAR:SW) show that much of the area was naturally inundated with water, not that it was natural inland wetland. Because the area was actively farmed, much of it was excluded as pasture. For example, Photo 16 (E5:9 REAR:SW), illustrates the wider

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			site just north of the proposed restoration area, where a low point in the Western Stream has allowed water to inundate, forming wetlands. Similarly, Photos 11 – 14, illustrate the proposed restoration site during winter, illustrating a mosaic of areas of natural inland wetland, areas of wetted pasture (much of which met the pasture exclusion criteria), and areas of higher ground.
		24. The Residual Effects Analysis Report: Streams and Wetlands notes that *'[b]etween the river and the proposed offset wetland is a small stopbank which would prevent smaller flood events from inundating the wetland area*'. Is there an intention to remove this stopbank to improve hydrological connectivity to the river? If there is no intention to remove this stopbank, please provide evidence that the wetland offset site hydrology would be sufficient to support and sustain the proposed restoration works as a natural inland wetland.	The intention is not to remove the stop bank, but rather lower it in select locations to improve hydrological connectivity with the river. Figures 10 and 11 of E5:9 REAR:SW show areas where the stop banks may be lowered to allow water to inundate the proposed restoration areas. Photo 16 illustrates the area immediately north of the site, just beyond the kahikatea block, where a small area of lowered bank has resulted in a large area of natural inland wetland. Figure 12 provides profiles with reference to the lowered inlet to the western stream and lowered inlet to the Waikato River – tidal inundation.
		25. Where the BCM is used to assess the wetland offset, why is the current wetland condition used for the Sutton Block wetlands, instead of a potential future state (the Panel understands that the NPS:FM requires that the 'future state' is considered when contemplating loss of ecological values for streams and wetlands)?	The potential was used in the BCM model. The potential of the stream and wetland was addressed in the EcIA under section 5.3.2, and the potential of the wetlands within the context of the future rural environment was assessed as Moderate and Low. This was put into the BCM as a 2 and described as *Wetlands are of low or moderate current ecological value, and of moderate **potential** ecological value, which equates to a score of two*. ie. the BCM model applies 2 to moderate habitat scores (page 10 of the BCM User Guide). Baber, M, Dickson, J, Quinn, J, Markham, J, Ussher, G, Heggie-Gracie, S, and Jackson, S (2021). A Biodiversity Compensation Model for New Zealand – A User Guide (Version 1). Prepared by Tonkin & Taylor Limited. Project number 1017287.0000P.
		26. For the BCM wetland model, please provide an explanation as to why a 2 % contingency has been applied – such that the total anticipated impacted wetland in the Sutton Block is 1.91 ha, when the Ecological Impact Assessment states that 1.88 ha of wetland will be impacted. For example, does this 1.91 ha of wetland used in the BCM model include potential indirect impacts of the Sutton Block development on wetlands?	The 2% contingency was added for the small seepage wetlands on the sides of the upper sections of Streams 1 and 2. These were often only several square metres where a flow path met the stream. Rather than try to map these very small areas and to ensure that they were accounted for, 2% was added to the delineated wetland loss. The 2% contingency was not for the potential indirect impacts of the Sutton Block on wetlands outside of the pit, which were addressed by mitigation as described in Response #10 and the hydrological augmentation responses above.
		27. Monitoring for stream restoration areas is proposed for 5 years using the SEV as a monitoring tool. The SEV forecasts ecological gains over a roughly 15-20 period, so monitoring after 5 years is unlikely to report achievement of the predicted SEV gains. Please provide an explanation as to why monitoring is proposed for only 5 years and what the implications are in terms of compliance reporting and assurance that restoration targets have been achieved.	The SEV methodology is heavily weighted towards riparian planting, far less so to the quality or age of the planting. It is standard practice to monitor riparian planting for 5 years, or canopy closure. The bulk of the SEV gains will be achieved within the first five years, with only minuscule SEV gains (assuming the planting is properly established) after that. Refer to response #28 below for compliance reporting and restoration targets. The conditions are proposed to be updated to require periodic monitoring (once every 5 years) to confirm that the SEV gains are being maintained. A revised set of conditions will be provided to the Panel as part of the updated conditions on 10 October (subject to any further direction from the Panel).
		28. Monitoring of ecological outcomes at the wetland and stream restoration sites at Tuakau do not appear to be proposed. Why is this not proposed, and how is monitoring intended to be undertaken in its absence?	Monitoring of ecological outcomes for all wetland and stream restoration sites is addressed through the existing consent conditions 61–64, which apply to all restoration sites, including the Tuakau site. These conditions require preparation and implementation of the Net Gain Delivery Plan: Riparian Planting (NGDP:RP) (Conditions 61 and 62) and the Net Gain Delivery Plan: Wetland Planting (NGDP:WP) (Conditions 63 and 64). Monitoring and maintenance requirements and planting monitoring targets and maintenance of those are specifically required in both the NGDP:RP and the NGDP:WP. However, the Applicant agrees in principle that similar short-term and long-term monitoring and reporting requirements should also be applied to the stream and wetland offset works to provide more clarity on what the monitoring and reporting requirements are. This approach would be consistent with the approach adopted for terrestrial ecology offsets. A revised set of conditions will be provided to the Panel as part of the updated conditions on 10 October (subject to any further direction from the Panel).
		29. To what degree do the Tuakau site wetland restoration activities replace wetland values compared to wetland extent?	The Tuakau site wetland restoration actives provide for loss of values and loss of extent. Please refer the map provide for Response # 23. Of the 4.04 ha proposed to be enhanced and restored, 0.5 ha is currently natural inland wetland, with the remainder wetted pasture 1.45 ha wetted pasture and pasture, 2.1 ha.
		30. Is there an ecological monitoring programme proposed for the stream and wetland offset and restoration sites? If not, what are the reasons why, and how is monitoring intended to be undertaken in its absence?	Refer to response at Row 28 above.

Response No.	Specialism	Comment summary	Applicant response
		31. The draft management plans lay out the terrestrial monitoring frequency, attributes to be assessed and expectations for meeting restoration targets. However, reporting requirements are scattered throughout the monitoring sections of the plans. Please provide a concise description of the ecological reporting that will be provided to support the terrestrial offsetting and restoration works. Please include details on the frequency, purpose, targets for that period, biodiversity re-modelling requirements to track progress against targets, and contingency actions that will be applied (including consultation with Auckland Council where appropriate) should monitoring show that expected targets are not being met.	A consolidated ecological reporting framework has been developed across the planting, pest control, and enhancement programmes (EMP; REAR-TE; NGDP:PP; NGDP:PWC). Reporting will include combined annual establishment-phase reports, milestone-based monitoring reports, and adaptive management reviews to demonstrate progress toward offsetting outcomes. Additional details on the timing of monitoring and targets are provided in Table 2 and Table 3 below. **Frequency of Reporting** • Establishment Phase (Years 1–5): o Revegetation: Annual reports documenting planting completion, survival, canopy establishment, weed control, and early pest management (NGDP:PP, Section 11.2). o Pest and Weed Control: Annual reports on control actions and outcomes (NGDP:PWC, Section 11.2–11.3). • Milestone Monitoring (per REAR-TE): o Monitoring targets are set for Years 5, 10, 15, 20, and 25, with some forest types assessed at Year 30. These are the primary "checkpoints" against which progress toward biodiversity net gain is measured (REAR-TE, Tables 42–52). o Monitoring includes vegetation structure, diversity, and fauna habitat indices, specific to each ecosystem type (Rock Forest, WF9 Taraire–tawa–podocarp, VS2 Kānuka, Relict Trees). • Progress Reviews: o At Years 7, 15, 20, 25, and 30, interim reviews (NGDP:PP Section 11.3) will supplement REAR-TE milestones, ensuring adaptive management responses are considered even where REAR-TE targets are longer-term. **Targets** • Targets are ecosystem-specific and are defined in REAR-TE monitoring tables: o Rock Forest: REAR-TE Tables 42–44. o WF9 Taraire–tawa–podocarp: Tables 45–47. o VS2 Kānuka Forest: Tables 48–50. o Relict Trees: Tables 51–52. • These targets measure canopy and understorey cover, diversity indices, regeneration rates, fauna habitat availability, and bird abundance (via pest management outcomes). **Biodiversity Re-modelling** • BOAM/BCM models will be re-run at Years 10 and 20, incorporating monitoring data to test actual performance against predicted net gain trajectories (REAR-TE Section 3.1; NGDP:PP Section 11.5.2). • Re-modelling will determine whether further offsetting or enhancement actions are required. • Contingency Actions • Revegetation: Replanting where mortality exceeds thresholds; supplementary enrichment planting where diversity is below the reference trajectory. • Pest and Weed Control: Increased predator control or an expanded trapping networks if bird abundance or seedling regeneration lags (NGDP:PWC, Table 2). • Additional Planting/Enhancement: Council Consultation: Formal consultation with Auckland Council (and DOC if relevant) will be triggered where monitoring shows material shortfalls against REAR-TE targets or when contingency planting is required (also refer to Conditon 56). **Summary:** The reporting framework integrates short-term annual reporting (Years 1–5) with REAR-TE milestone monitoring (Years 5–25/30). This dual system ensures early issues are identified, while long-term ecological success is measured against robust, ecosystem-specific targets. Adaptive management, biodiversity re-modelling, and contingency measures (including supplementary planting and enhanced pest control) provide confidence that the required net biodiversity gain will be achieved.
		32. The Drury Creek Islands Recreation Reserve was previously proposed as a location for offset planting, including the planting of 113 totara of the total of 887 trees proposed to replace the relict trees removed from the Sutton Pit footprint. The Panel understands that the planting on the Drury	As set out in Table 8 of the REAR-TE, replacement planting of relict trees will occur between Years 1 – 10. The 113 totara trees originally proposed to be planted on the Drury Creek Islands Recreation Reserve will now be included in the revegetation planting for VS2 (kanuka scrub/forest) to be undertaken at Drury Quarry. This is consistent with the previously proposed Hingaia Islands offset.

Response No.	Specialism	Comment summary	Applicant response
		Creek Islands is now no longer proposed. Is there an intention to undertake planting of the 113 totara at another location? If not, how is this deficit addressed in the offset replacement calculations?	
		33. The draft proposed conditions of consent do not include a financial bond for the ecological enhancement and restoration offset works (including monitoring, re-assessment and corrective actions, if any are needed). What are the reasons for this and how are the ecological works over the life of the consent otherwise proposed to be financially guaranteed?	A financial bond has not been proposed as part of the consent conditions. Unlike subdivision developments, where financing or completion risk may exist, the quarry operation is long-standing, financially stable, and committed to ongoing management of the site. Accordingly, there is a very low risk that the ecological enhancement and restoration works (including monitoring and any corrective actions) would not be delivered. The ecological works are instead secured through enforceable consent conditions that require their implementation and monitoring over the life of the consent. The bulk of the restoration planting (68%) will be implemented at least 10 years in advance of vegetation loss (refer to Table 2, NGDP:PP). This ensures the offset planting is well established and delivering ecological benefits before the vegetation it replaces is removed. Similarly, all of the ecological enhancement will be implemented at Year 1, at the same time as vegetation removal begins. With immediate gains expected from pest and weed control, the biodiversity benefits accruing for the site will occur decades ahead of the bulk of the vegetation removal. On this basis, no financial bond is considered necessary.
		34. Draft proposed conditions C18 – C23 currently do not include requirements to monitor and report success against targets, or to review monitoring results and adaptively manage where necessary. Please consider amendments to address these requirements.	Refer to the revised Condition Set filed with the Panel on 22 September. The suite of Net Gain Delivery Plans (now Conditions 51-64) set out requirements for monitoring and reporting and report success against targets, or to review monitoring results and adaptively manage where necessary. The Applicant notes that most of the terrestrial offset will be undertaken in advance of vegetation loss. Outcomes of monitoring against targets, reporting and adaptive management will be available to the Council in advance of vegetation loss. See updates to Conditions 58 & 61 for the NGDP: PWC and NGDP:PP.
		35. Draft proposed conditions H7, H8 and H9 provide for short term and long-term monitoring and reporting, (including comparison against offset targets) for terrestrial ecology offset works. Please provide corresponding requirements for the stream and wetland offset works (i.e. offset targets, measures, monitoring and reporting).	Currently, monitoring and reporting requirements for wetland and stream offset works are addressed through the respective Riparian Planting Plans and Net Gain Delivery Plans (refer to draft Conditions 51–52 and 60–64). It is agreed in principle that similar short-term and long-term monitoring and reporting requirements should also be applied to the stream and wetland offset works to provide more clarity on what the monitoring and reporting requirements are. This approach would be, consistent with the approach adopted for terrestrial ecology offsets. A revised set of conditions will be provided to the Panel on 10 October (subject to any further direction from the Panel).
		36. Draft proposed conditions H7, H8 and H9 provide for 'contingency actions' should monitoring show that monitoring targets are not being met. Please consider amendments to address triggers for raising under-performance with Auckland Council, and a pathway for undertaking additional ecological offsetting works to address any shortfall anticipated or measured towards achieving the stated net-gain targets.	Contingency actions for terrestrial planting are set out in Section 11.5.2 of the NGDP:PP, which includes a 10% trigger value for the implementation of adaptive management. This requires additional modelled actions to be presented for certification. The Applicant acknowledges that this element has not yet been carried through into the draft condition set. A revised set of conditions addressing this matter will be prepared and provided to the Panel on 10 October (subject to any further direction from the Panel), and will cover both terrestrial and wetland/stream offset works.

Table 2. The framework integrates annual establishment-phase monitoring (Years 1–5) as set out in the Net Gain Delivery Plans (NGDP:PP and NGDP:PWC) with ecosystem-specific milestone monitoring (Years 5–30) from the REAR-TE (Tables 42–52). It identifies the relevant monitoring tables for each ecosystem type (Rock Forest, WF9 Taraire–tawa–podocarp, VS2 Kānuka, and Relict Trees), highlights when biodiversity offset models (BOAM/BCM) will be re-run (Years 10 and 20), and sets out contingency actions should targets not be met. Table 51 of the REAR-TE provides a consolidated summary of these requirements. In addition, Tables 2 and 16 of the NGDP:PP show the year-on-year progression of planting across the various ecosystem types and phases, and how this aligns with the monitoring framework. Table 2 also identifies the extent of advance planting.

Year	Frequency	Purpose	Targets				Biodiversity Re-modelling	Contingency Actions	Source
			Rock Forest	WF9 Taraire–Tawa–Podocarp	VS2 Kānuka	Relict Tree Targets			
Years 1–5	Annual	Establishment monitoring of planting and pest/weed control	General establishment (survival, canopy, weeds)	General establishment (survival, canopy, weeds)	General establishment (survival, canopy, weeds)	General establishment (survival, canopy, weeds)	Not required	Replanting if survival <80%; adjust pest/weed programme	NGDP:PP Sec 11.2; NGDP:PWC Sec 11.2–11.3
Year 5	Milestone (REAR-TE)	First biodiversity performance checkpoint	REAR-TE Tables 42–44	REAR-TE Tables 45–47	REAR-TE Tables 48–50	REAR-TE Tables 51–52	Not required	Replant/enrich planting; adjust pest management	REAR-TE Tables 42–52
Year 7	Progress Review	Interim review of offset trajectory (supplementing REAR-TE)	REAR-TE Tables 42–44	REAR-TE Tables 45–47	REAR-TE Tables 48–50	REAR-TE Tables 51–52	Optional if lagging	Supplementary enrichment planting; intensify predator control	NGDP:PP Sec 11.3; NGDP:PWC Sec 12.3
Year 10	Milestone (REAR-TE) + Progress Review	Check performance against BOAM; major review point	REAR-TE Tables 42–44	REAR-TE Tables 45–47	REAR-TE Tables 48–50	REAR-TE Tables 51–52	Re-run BOAM/BCM	Advance supplementary planting or enhancement if needed	REAR-TE Sec 3.1; NGDP:PP Sec 11.5.2
Year 15	Milestone (REAR-TE) + Progress Review	Mid-term biodiversity outcomes	REAR-TE Tables 42–44	REAR-TE Tables 45–47	REAR-TE Tables 48–50	REAR-TE Tables 51–52	Optional if lagging	Replant/augment areas; intensify pest control	REAR-TE Tables 42–52
Year 20	Milestone (REAR-TE) + Progress Review	Long-term trajectory check	REAR-TE Tables 42–44	REAR-TE Tables 45–47	REAR-TE Tables 48–50	REAR-TE Tables 51–52	Re-run BOAM/BCM	Apply supplementary planting if shortfall persists	REAR-TE Fig 4; NGDP:PP Sec 9
Year 25	Milestone (REAR-TE)	Verification of offset nearing maturity	REAR-TE Tables 42–44	REAR-TE Tables 45–47	REAR-TE Tables 48–50	REAR-TE Tables 51–52	Optional	Further planting or predator control if lagging	REAR-TE Tables 42–52
Year 30	Milestone (REAR-TE, where applicable)	Final check for long-term forest types (e.g., WF9, Rock Forest)	REAR-TE Tables 42–44	REAR-TE Tables 45–47	REAR-TE Tables 48–50	Not applicable	Optional	Legal covenants, supplementary actions if under-delivery persists	REAR-TE Tables 42–52

Sutton Block – Quarry Staging and Aligned Offset/Compensation Actions (2025 = Year 0)

This table aligns the five indicative quarry stages with ecological offset and compensation actions on a single, year-indexed timeline using 2025 as Year 0. Stage descriptions and vegetation losses by stage are drawn from E4:9 REAR-TE (Section 2.2.3 and Stage tables), with aquatic staging from E2:9 EcIA (Table 50) and E5:9 REAR-SW (Table 5). Offset actions and monitoring cadence are taken from E4:9 REAR-TE (Table 8; Tables 42–52; Table 51) and the Net Gain Delivery Plans: E6:9 NGDP:PP (Sections 11.2–11.5) and E7:9 NGDP:PWC (enhancement programme and duration). All references include the report identifier and the relevant section/table/figure numbers for traceability.

Table 3. The Sutton Block staging by year (2025 = Year 0) with Stage 1–5 activities and aligned offset/compensation actions. Sources are cited by report and section/table/figure.

Calendar year (Project year)	Stage 1 (Years 0–3)	Stage 2 (Years 3–15)	Stage 3 (Years 15–30)	Stage 4 (Years 30–40)	Stage 5 (Years 40–50)	Offset / compensation actions (aligned to Year 0)	Key sources
2025 (Year 0)	Mobilization & early works: roading, bunds, conveyor set-up; drain farm dam to sediment pond; associated stream diversion; overburden stockpiles established.	—	—	—	—	Planning and mobilization for terrestrial offsets and enhancement; aquatic offset designs confirmed.	Section 2.2.3.1, E4:9 REAR-TE; Table 50, E2:9 EcIA
2026 (Year 1)	Stage 1 continues. Vegetation clearance begins within Stage 1 footprint.	—	—	—	—	Enhancement commences across 108.35 ha and runs 25 years; WF9 (3 ha, Stages 1–2) Phase 1 planting (Years 1–5); Rock Forest substrate preparation in Year 1.	Section 2.2.3.1, E4:9 REAR-TE; Table 8, E4:9 REAR-TE; Table 15 (note), E4:9 REAR-TE; Sections 11.2–11.3, E6:9 NGDP:PP; Exec summary, E7:9 NGDP:PWC
2027 (Year 2)	Stage 1 continues.	—	—	—	—	Rock Forest Phase 1 planting (3 ha, Years 2–3) continues; WF9 (2 ha, Stages 1–2) Phase 1 planting continues; enhancement ongoing.	Table 8, E4:9 REAR-TE; Table 15, E4:9 REAR-TE
2028 (Year 3)	Stage 1 completes.	Stage 2 begins (interim pit established; incremental deepening/widening; internal roads).	—	—	—	Rock Forest Phase 1 planting continues (5.32 ha); enhancement ongoing.	Section 2.2.3.2, E4:9 REAR-TE; Figure 9 & Table 12, E4:9 REAR-TE
2029 (Year 4)	—	Stage 2 operations continue.	—	—	—	WF9 (5 ha, Stages 1–2) Phase 1 planting continues and Phase 2 enrichment (Years 4–8) begins for Year 1 pioneer planting; enhancement ongoing.	Table 8, E4:9 REAR-TE

2030 (Year 5)	—	Stage 2 operations continue.	—	—	—	WF9 (2 ha, Stages 1–2) Phase 1 planting continues and Phase 2 enrichment (Years 4–8) Milestone monitoring (Year 5) vs REAR-TE targets; Planting Establishment Report (NGDP:PP Year 5). Begins for Year 1 pioneer planting.	Tables 42–52 & Table 51, E4:9 REAR-TE; Section 11.2, E6:9 NGDP:PP
2031 (Year 6)	—	Stage 2 operations continue.	—	—	—	WF9 (5 ha, Stages 4–5) Phase 1 planting (Years 6–9) commences; enhancement ongoing. WF9 (Stages 1–2) Phase 2 planting continues.	Table 8, E4:9 REAR-TE
2032 (Year 7)	—	Stage 2 operations continue.	—	—	—	WF9 (5 ha, Stages 4–5). Progress Review (Year 7) and long-term monitoring review (NGDP:PP).	Section 11.3, E6:9 NGDP:PP
2033 (Year 8)	—	Stage 2 operations continue.	—	—	—	WF9 (5 ha, Stages 4–5) Phase 1 continues; enhancement ongoing.	Table 8, E4:9 REAR-TE
2034 (Year 9)	—	Stage 2 operations continue.	—	—	—	WF9 (5 ha, Stages 4–5) Phase 2 (Years 9–13) begins; Rock Forest Phase 2 (Years 5–9) concludes.	Table 8, E4:9 REAR-TE; Table 15, E4:9 REAR-TE
2035 (Year 10)	—	Stage 2 operations continue.	—	—	—	VS2 planting (4 ha). Milestone monitoring (Year 10); BOAM/BCM re-modelling; continue Phase 2 planting programmes.	Section 3.1 & Tables 42–52, E4:9 REAR-TE; Section 11.5.2, E6:9 NGDP:PP
2036–2039 (Years 11–14)	—	Stage 2 operations continue.	—	—	—	WF9 (Stages 4–5) Phase 2 continues (to Year 13); all WF9 planting completed by Year 13; enhancement ongoing. VS2 planting ongoing (3 ha/year)	Section 2.2.3.6, E4:9 REAR-TE; Table 8, E4:9 REAR-TE

2040 (Year 15)	—	Stage 2 completes.	Stage 3 begins. Vegetation losses during Stage 3: 13 relict native trees.	—	—	Milestone monitoring (Year 15) vs REAR-TE targets; maintenance & monitoring of completed plantings. VS2 planting ongoing (3 ha/year)	Section 2.2.3.3, E4:9 REAR-TE; Tables 42–52, E4:9 REAR-TE
2041 (Year 16)	—	—	Stage 3 operations continue.	—	—	VS2 Phase 1 planting (Years 10–16) completes; all terrestrial offset planting completed by Year 16; enhancement continues (to Year 25).	Table 8 & Section 2.2.3.6, E4:9 REAR-TE
2042–2044 (Years 17–19)	—	—	Stage 3 operations continue.	—	—	Maintenance/monitoring of plantings; enhancement continues; aquatic offsets maintenance per programmes.	Table 51, E4:9 REAR-TE; Sections 11.3–11.4, E6:9 NGDP:PP
2045 (Year 20)	—	—	Stage 3 operations continue.	—	—	Milestone monitoring (Year 20); BOAM/BCM re-modelling; adaptive management if shortfall vs model.	Section 3.1 & Tables 42–52, E4:9 REAR-TE; Section 11.5.2, E6:9 NGDP:PP
2046–2049 (Years 21–24)	—	—	Stage 3 operations continue.	—	—	Maintenance/monitoring; enhancement continues toward 25-year completion.	E7:9 NGDP:PWC (programme duration); E6:9 NGDP:PP Sections 11.3–11.4
2050 (Year 25)	—	—	Stage 3 operations continue.	—	—	Milestone monitoring (Year 25); enhancement programme (108.35 ha) completes ~25 years after Year 1.	Tables 42–52 & Table 51, E4:9 REAR-TE; Exec summary, E7:9 NGDP:PWC
2055 (Year 30)	—	—	Stage 3 concludes; preparations for Stage 4.	Stage 4 begins. Vegetation losses during Stage 4: 2.66 ha WF9; 5.06 ha VS2; 130 relict trees (over the stage).	—	Milestone monitoring (Year 30) where applicable; verify offset age (WF9 ≥10 years; VS2 planting completed by Year 16).	Section 2.2.3.4 & Table 13, E4:9 REAR-TE; Section 2.2.3.6, E4:9 REAR-TE

2065 (Year 40)	—	—	—	Stage 4 continues.	—	Ongoing monitoring against REAR-TE targets; aquatic offsets continue per REAR-SW programme.	Tables 42–52, E4:9 REAR-TE; Table 5, E5:9 REAR-SW
2075 (Year 50)	—	—	—	—	Stage 5 (Life of Quarry). Vegetation losses during Stage 5: 5.45 ha WF9; 3.74 ha VS2; 115 relict trees (over the stage).	WF9 offsets are ≥20 years old by Stage 5; confirm end-of-programme outcomes.	Section 2.2.3.5 & Table 14, E4:9 REAR-TE