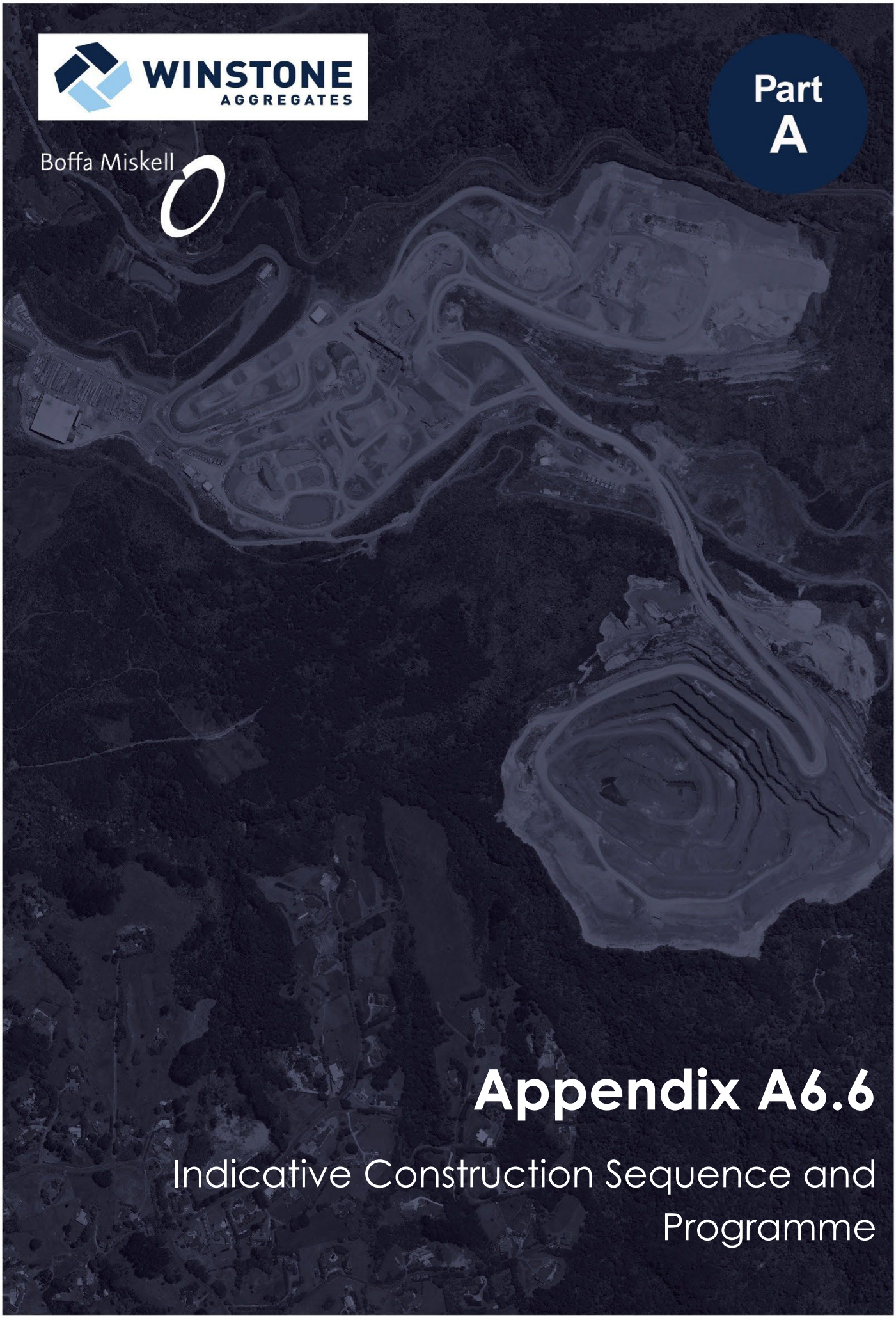
WINSTONE AGGREGATES

Boffa Miskell

Part A



Appendix A6.6

Indicative Construction Sequence and Programme

Appendix 6.6 - Indicative construction sequence and programme

The Symonds Hill Pit development is presently anticipated to occur in **eight indicative stages** to allow continuous production while progressively implementing environmental mitigation, to enable operational flexibility and the need to respond to market conditions, the staging and programme may not be followed sequentially.

The stages are indicative only and provide for the development of the existing pit to a depth of (at least) RL-50. As the Life of Quarry Strategy identifies, development below RL-50 or beyond the 35-50-year horizon relies on a range of factors that will need to be the subject of further investigation alongside the renewal/obtaining the various regional consents required. Those investigations are provided for through the draft conditions of consent, to enable extraction over the full 80-year period and within the proposed extent of the quarry pit shown.

Table 1 below identifies each stage, an overview of the activities to be undertaken and whether these are part of the enabling works or '*business as usual*' quarrying activity. The time required to achieve each stage is also set out, although this is approximate and no requirements or conditions are proposed to be based upon such timeframes. Earthwork volumes, vegetation clearance and offsetting/compensation requirements will be linked to the stages set out below. The conditions are also proposed to be based on the stages, with each consent (land use including vegetation clearance and the disposal overburden, water takes and discharges etc.) containing two sets of conditions: one comprehensive set of conditions that relate to *enabling works* (that will fall away once these works are complete) and one set of conditions that relate to quarrying.

However, and as noted in the Part A: Overview for the substantive application, the project is not planned to proceed in stages, in terms of it being a staged project for the purposes of section 13(4)(f)(i) and section 43(2)(b). An application is made, and approval is sought for the entire listed project.

Quarrying will be continuous and progressive across the site, the references to stages in the application are references to continuous phrases of the extraction programme only to reflect the engineering design of the pit shell and earthworks. Indicate timing and phasing of enabling works and pit development is set out below.

Table 1: Indicative stages of development

Stage	Activity	Nature of the works	Approximate duration (years)
1	Tributary realignment including the construction of a temporary bridge.	Enabling works	4

Stage	Activity	Nature of the works	Approximate duration (years)
	Stripping campaign to the northwest (NW), occurs concurrently with the tributary realignment. Provided for under existing consents.	Extraction and processing	1-4
2	Stream diversion completed – the temporary bridge will be removed.	Enabling works	1
	NW cut down to 105RL. Provided for under existing consents.	Extraction and processing	
	Construct the western haul road.	Enabling works	
3	Incremental stripping campaigns: south from current pit crest towards stream diversion down to 120RL	Extraction and processing	1
4	Incremental stripping campaigns: southwest of the stream diversion and adjacent to the southern site boundary	Extraction and processing	43-73
5	Incremental stripping campaigns: southern boundary towards the current pit	Extraction and processing	
6	Incremental stripping campaigns: in an anticlockwise direction, extending the pit to the south and northwest and deepening the pit	Extraction and processing	
7	Realign the western haul road, so that it runs, for a short distance, along the southeast extent of the pit. This will enable the pit to extend to the northwest.	Enabling works	
	Incremental stripping campaigns: in an anticlockwise direction, extending the pit to the southwest and northwest and deepening the pit	Extraction and processing	
8	Incremental stripping campaigns: in an anticlockwise direction, extending the pit to the northwest and north.	Extraction and processing	

Stage 1 - Infrastructure establishment: tributary realignment (Years 1- 4)

Stage 1 includes the realignment of the tributary to Mangapū (Symonds) Stream, including construction of a temporary bridge to support access and sequencing. The works are anticipated to take approximately four years, with the tributary proposed to be commissioned near the end of this stage (programme timing subject to the final construction and enabling works framework).

Stage 1 also includes supporting enabling works such as access formation, installation of erosion and sediment controls, and earthworks required to establish the diversion corridor and associated construction areas. For more detail, see the Mangapū Tributary Realignment – Preliminary Design and Effects Technical Report (**Appendix B.12.4.6**).[1]

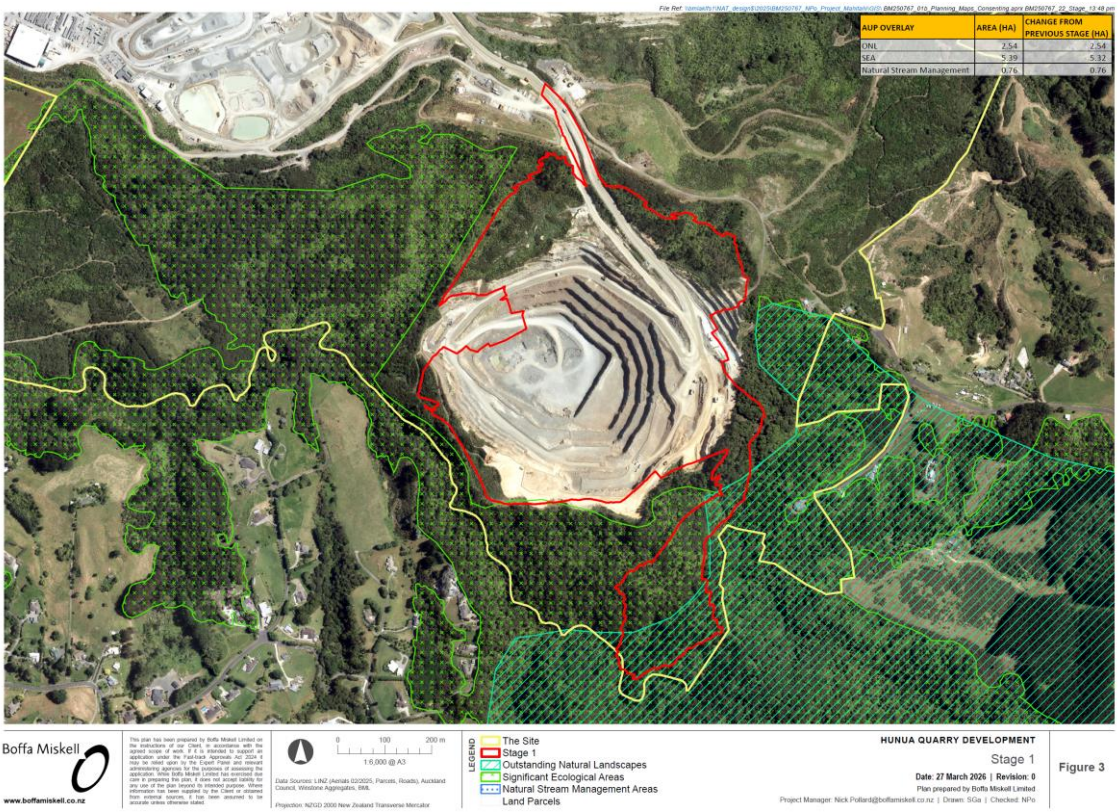


Figure A6.6-1: Stage 1 - Indicative tributary realignment enabling works and temporary bridge

In parallel with the tributary enabling works, an incremental northwest stripping campaign is proposed to occur concurrently (within the existing consent framework where applicable). This campaign supports operational continuity while the tributary realignment works are delivered. During this stage, existing consented quarrying

[1] Where a reference in this appendix is made to a technical report provided as part of the substantive application, that report takes precedence over this summary. This summary is intended to provide a high-level description of the indicativeconstruction sequence and programme.

operations will continue as usual, occurring simultaneously with the tributary realignment works.

Stage 2 - Diversion completion and western haul road construction (Years 4 - 6)

Stage 2 includes completion of the stream diversion and removal of the temporary bridge once the new channel is operational. Stage 2 also includes construction of the western haul road providing a more efficient and effective connection between the quarry development area and the processing plant. Works include formation of the haul route, associated drainage and sediment controls, and culvert crossings as required. The construction of the western haul road will improve operational efficiency and reduce haul distances and fuel use, as detailed in section 7.2.2 of the Resource Report (**Appendix B12.4.12**).

Utility interface works are anticipated within this stage, including relocation of the high voltage powerline where required to minimise risk to personnel and operations (noting the project description anticipates relocation around Year 4).

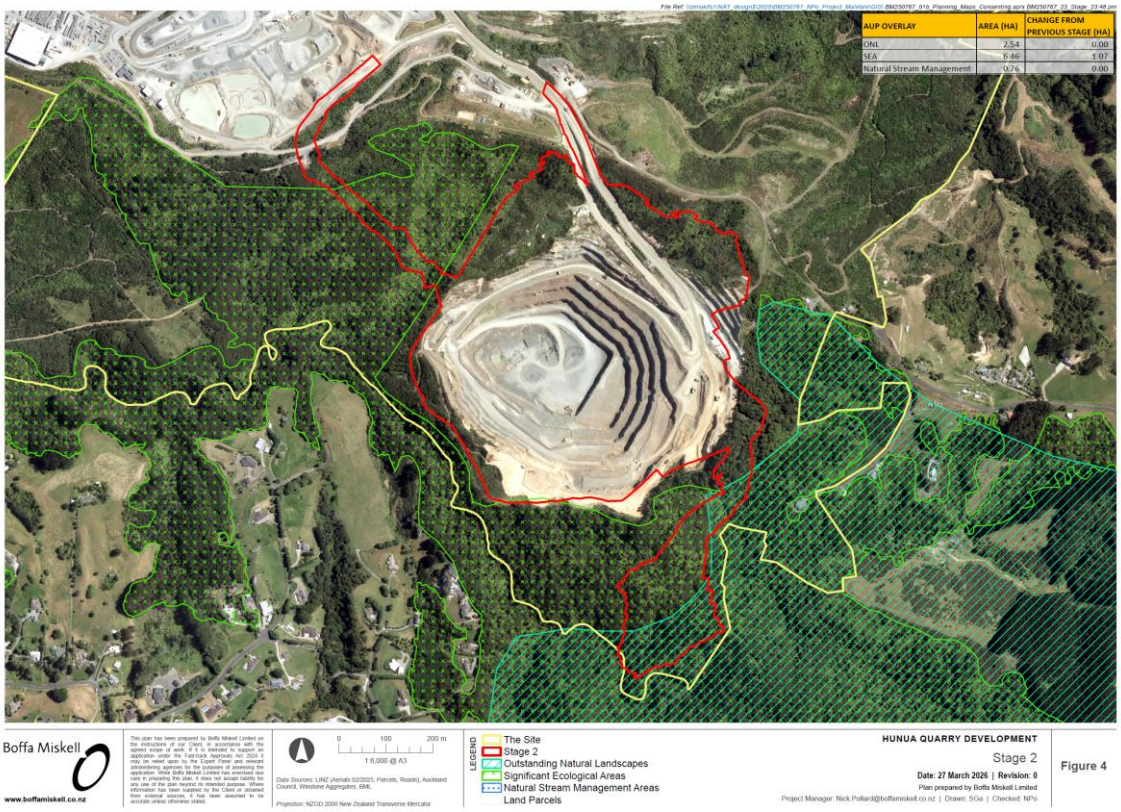


Figure A6.6-3: Stage 2 - Indicative diversion completion and western haul road construction

Stage 3 - Operating quarry: southward stripping campaigns (Years 6- 7)

Stage 3 comprises incremental stripping campaigns progressing south from the current pit crest towards the diversion corridor (to approximately 120 RL). Works are anticipated to be undertaken in a manner that maintains separation from sensitive boundaries and supports staged delivery of mitigation, monitoring, and management plan requirements.

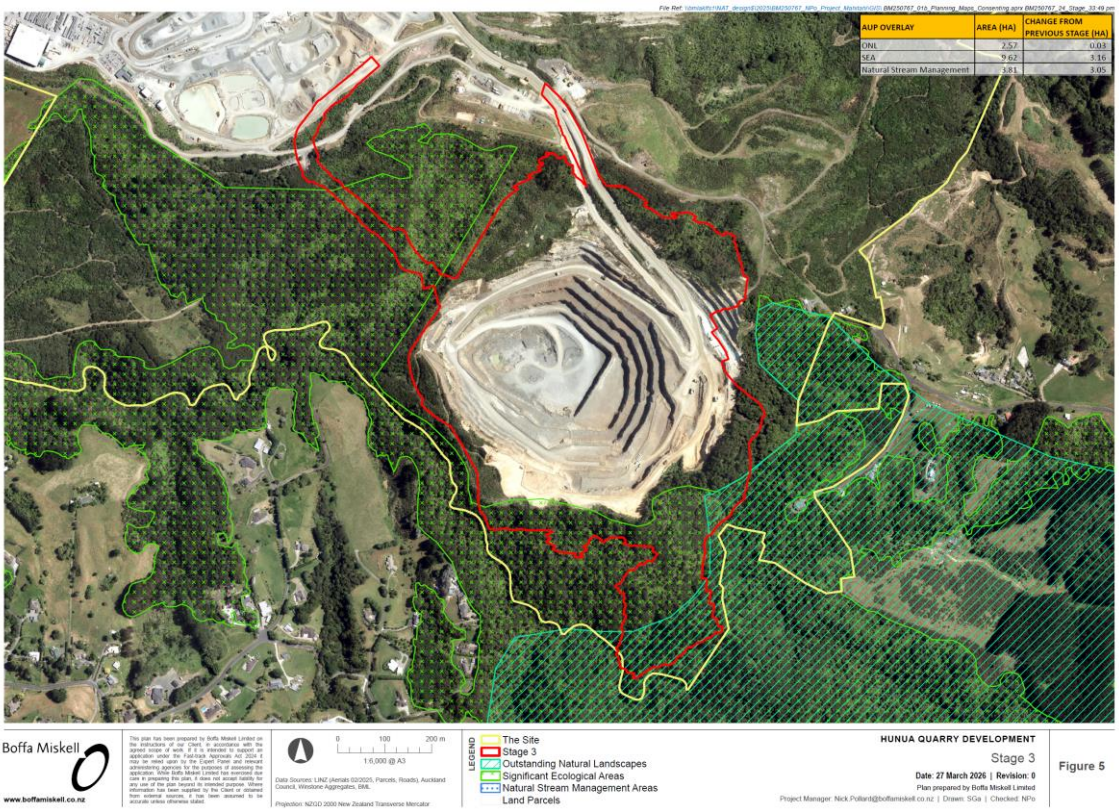


Figure A6.6-4: Stage 3 - Indicative southward stripping campaign extent

Stage 4 - Operating quarry: southwest expansion adjacent to southern boundary (Years 7+))

Stage 4 comprises incremental stripping campaigns southwest of the diversion corridor and adjacent to the southern site boundary. This stage represents a longer-term progression of the pit footprint and will be delivered incrementally depending on demand, sequencing constraints, and operational requirements.

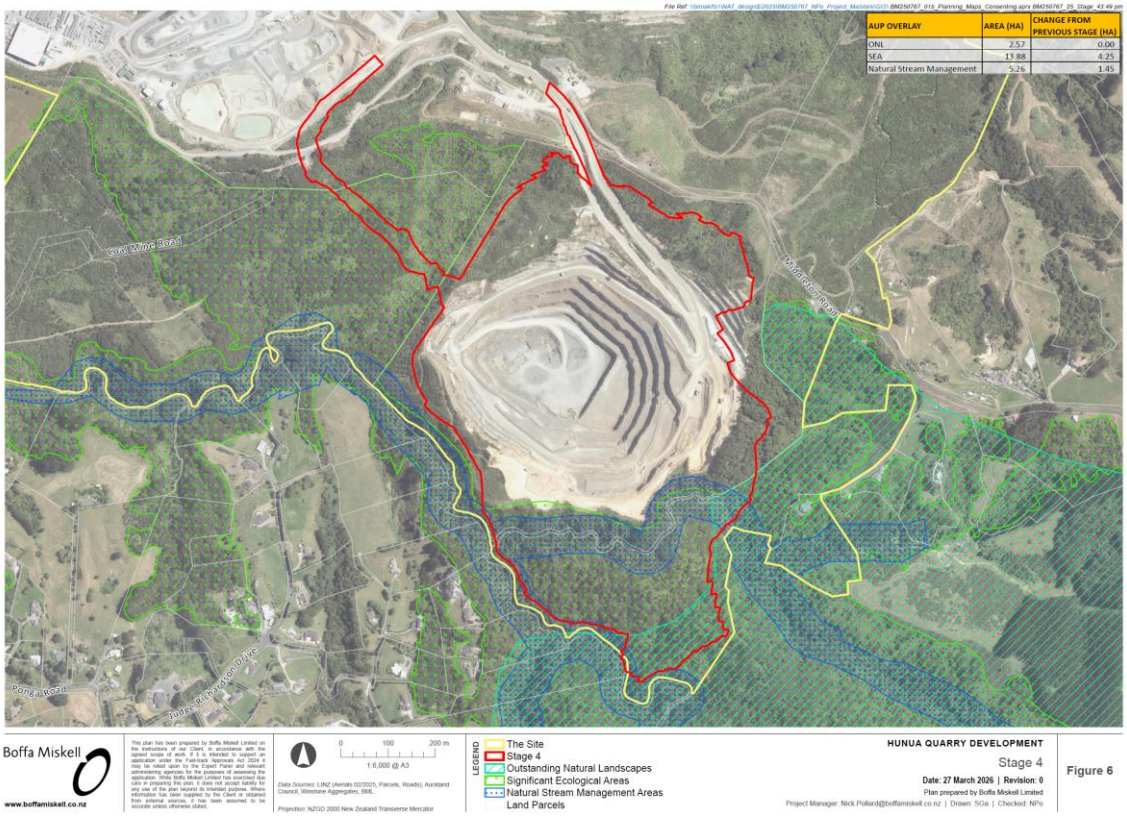


Figure A6.6-5: Stage 4 - Indicative southwest expansion area

Stage 5 - Operating quarry: southern boundary towards current pit

Stage 5 comprises incremental stripping campaigns progressing from the southern boundary back towards the current pit, continuing the staged expansion and deepening approach.

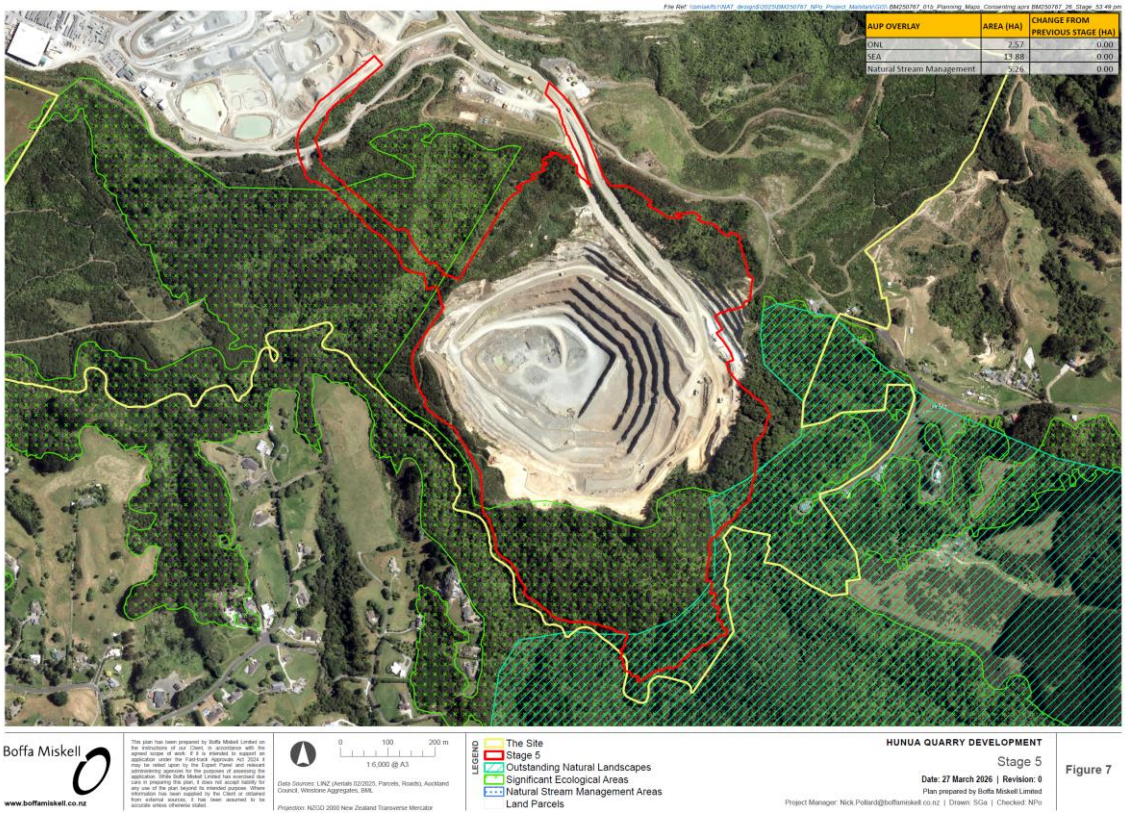


Figure A6.6-6: Stage 5 - Indicative southern boundary progression

Stage 6 - Operating quarry: anticlockwise expansion and deepening

Stage 6 comprises incremental stripping campaigns progressing in an anticlockwise direction, extending the pit to the south and northwest and further deepening the pit.

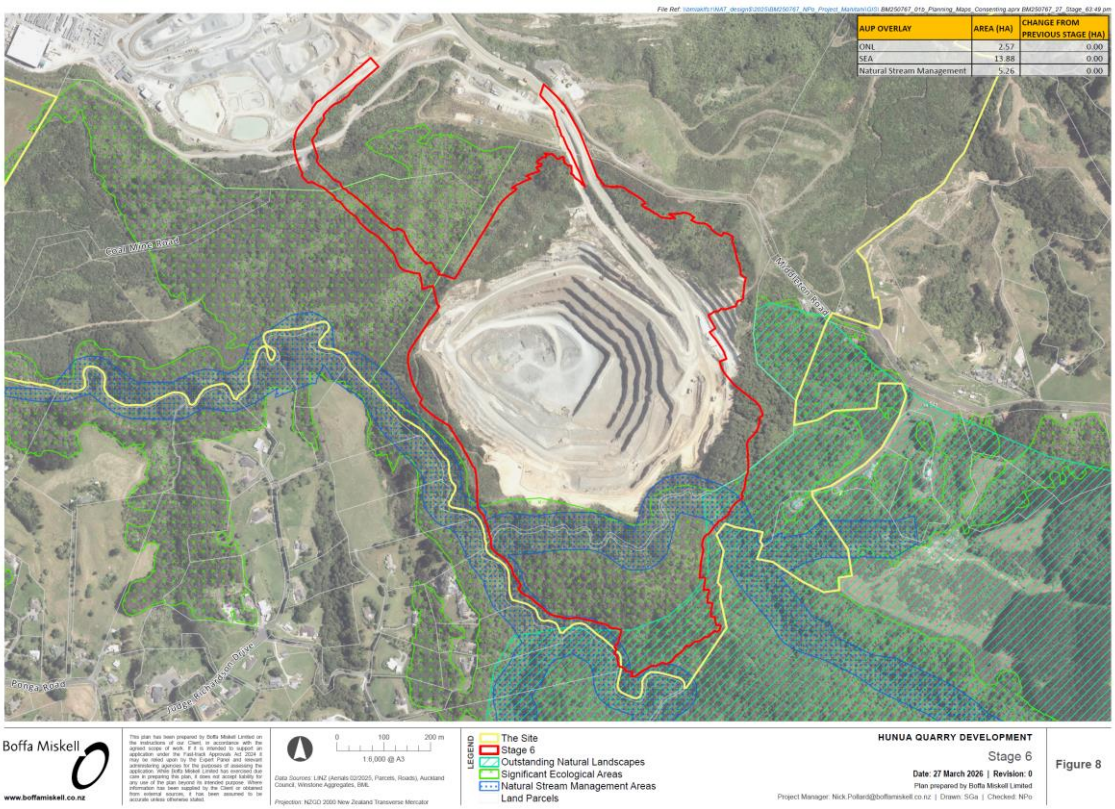


Figure A6.6-7: Stage 6 - Indicative anticlockwise expansion and deepening

Stage 7 - Enabling works and operating quarry: western haul road realignment

Stage 7 includes realignment of the western haul road so it runs, for a short distance, along the southeast extent of the pit to enable extension of the pit to the northwest. This stage also includes incremental stripping campaigns continuing anticlockwise to extend the pit to the southwest and northwest and deepen the pit.

The Middleton Road 22 kV lines owned by Counties Power will need to be relocated prior to completion of Stage 7, with appropriate lead-in time for design and network approvals.

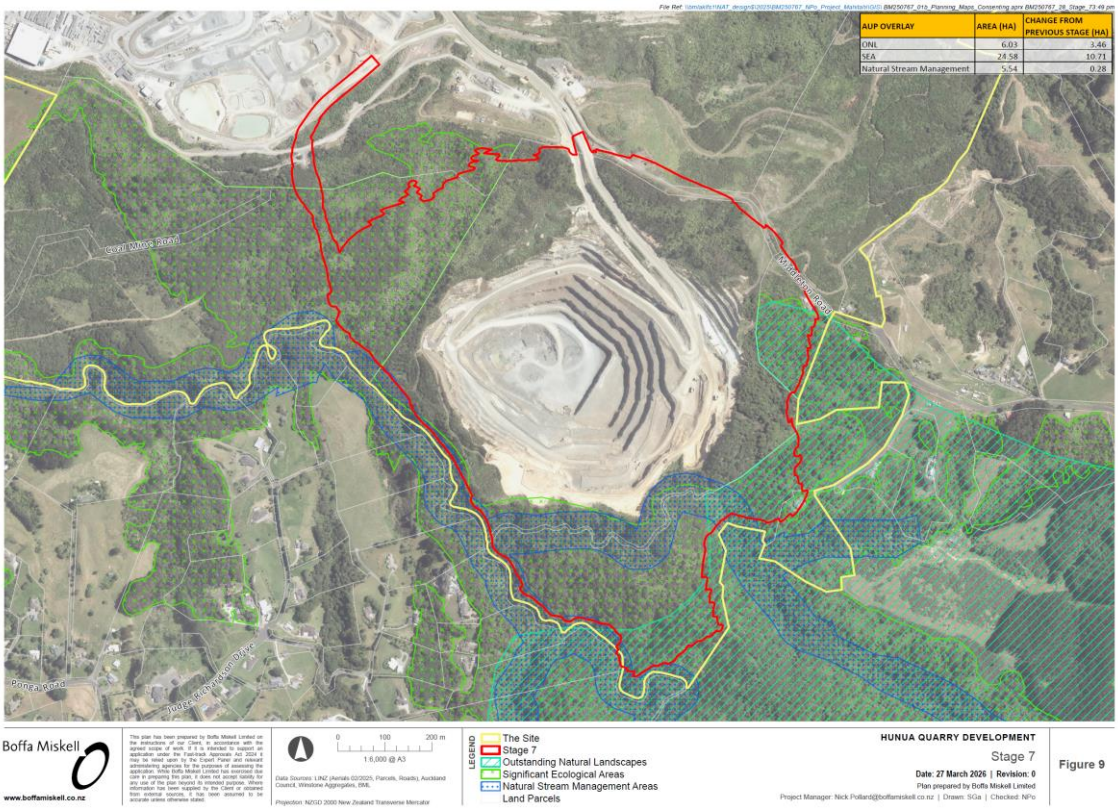


Figure A6.6-8: Stage 7 - Indicative haul road realignment and northwest enablement

Stage 8 - Operating quarry: northwest and north expansion (Years TBC)

Stage 8 comprises incremental stripping campaigns continuing in an anticlockwise direction, extending the pit to the northwest and north. This stage represents the long-term progression of the extraction footprint within the overall development envelope.

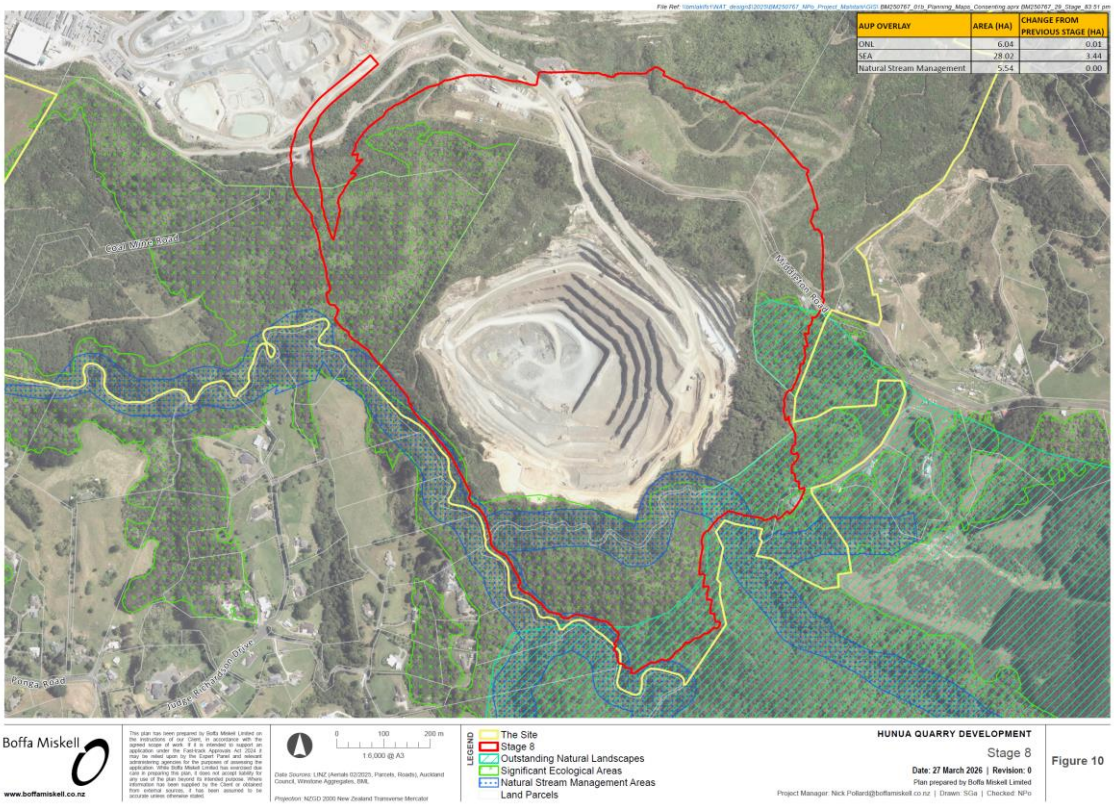


Figure A6.6-9: Stage 8 - Indicative northwest and north expansion

Indicative staging and Life of Quarry Strategy

The extraction of resources from a quarry is reliant on market demand, which then influences the design of the pit and the length of life any pit design has. If the market demand is higher, the resource will be extracted earlier; if it is slower, it will stay in the ground for longer. The substantive application includes a Resource Report which includes a Life of Quarry Strategy, identifying potential options for how the quarry development could progress (subject to the necessary investigations and assessments being undertaken at the relevant time) beyond the current maximum term of the regional consents, alongside the land-use consents that enable up to 80 years' extraction and rehabilitation options for the post-closure period.

The final Life of Quarry Strategy will be confirmed prior to any excavation below RL-50m, and will detail further investigations necessary to ensure that adverse environmental effects associated with later-stage extraction and/or rehabilitation are appropriately identified, assessed, and managed (including obtaining any regional consents required).

Overburden removal and placement

The initial excavation of material is classed as overburden, comprising topsoil and underlying soils/weathered material that must be removed to access the rock resource. Overburden will be stripped using excavators and transported by rigid dump trucks to designated placement areas.

Overburden handling will be staged to support enabling works delivery (including the diversion corridor), operational continuity, and the construction of temporary and permanent landforms where required (for example, bunding and reshaping associated with access and mitigation).

Overburden removal is anticipated to occur predominantly during the winter months (May to October), subject to stringent erosion and sediment controls and monitoring requirements, and with adaptive management during wet weather events.

Vegetation is generally mulched/chipped and managed to support reuse of topsoil material for rehabilitation, with vegetation clearance typically undertaken in advance of overburden stripping to allow breakdown and preparation of surfaces for later rehabilitation.