

Takaanini Level Crossings Appendix J - Cost Report

October 2023

Version 1.0

Document Status

Responsibility	Name
Author	Bruno Busnardo Mark van der Ham
Reviewer	Christopher Gee Georgia Cottrell Jason Luo
Approver	Rob Mason

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0.2	4 th November 2022	Issue for Owner Participant Subject Matter Expert Review
0.3	1 st February 2023	Issue for IQA review
1.0	31 st October 2023	Final

Cost Estimate Summary Table

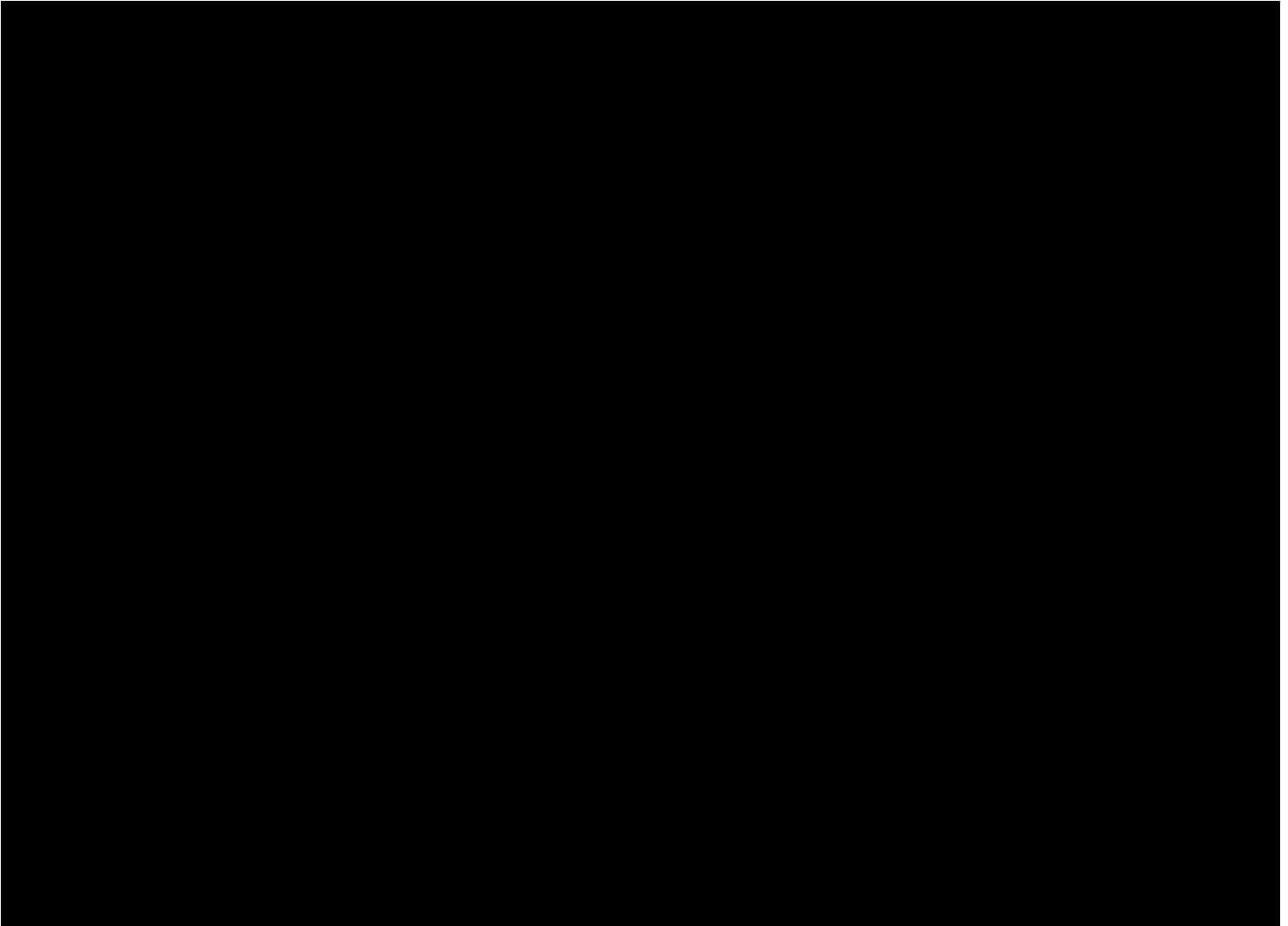
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Table of Contents

1	Introduction	1
2	Approach to cost estimation	1
2.1	Property	1
2.2	Project development phase	2
2.3	Pre-implementation phase.....	2
2.4	Implementation phase.....	2
2.4.1	Implementation fees.....	2
2.4.2	Physical works	3
2.5	Risk and Contingencies	3
2.6	Escalation	4
2.7	Verification	4
3	Cost summary	5

Appendices

1	Appendix A Cost estimate summary forms (DBE)
2	Appendix B Property cost estimate memorandums
3	Appendix C Generic physical works assumption schedule
4	Appendix D Project costing segments

Figures

Figure 1	Takaanini level crossings costing scope of works.....	1
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Tables

Table 1	Elemental cost summary	ii
Table 2	Assumed temporary occupation by project corridor	2
Table 3	Cost summary by project costing segment.....	5
Table 4	Cost summary by project corridor.....	5

Acronym/Term	Description
AT	Auckland Transport
AUP	Auckland Unitary Plan
CEM	SM014 Cost Evaluation Manual
CH	Chainage
DBC	Detailed Business Case
SM014	SM014 Cost Evaluation Manual
WK	Waka Kotahi

1 Introduction

This estimate has been prepared to provide an indication of costs for future budget forecasting and for inclusion in the economic analysis, part of the Appendix K Economics assessment within the Takanini Level Crossings Detailed Business Case (DBC).

This document should be read in conjunction with the Appendix H Design report within the Takaanini Level Crossings (DBC) and appended general arrangement plan.

The costing of works has been based primarily on the revision A general arrangement drawing dated August 2022, the generic assumptions schedule outlined in Appendix B of this report, and indicative property cost outlined in the Appendix C. The estimates have been prepared to reflect the projects highlighted on the Figure 1. Sub-segments of the grade separated corridors have been costed separately.

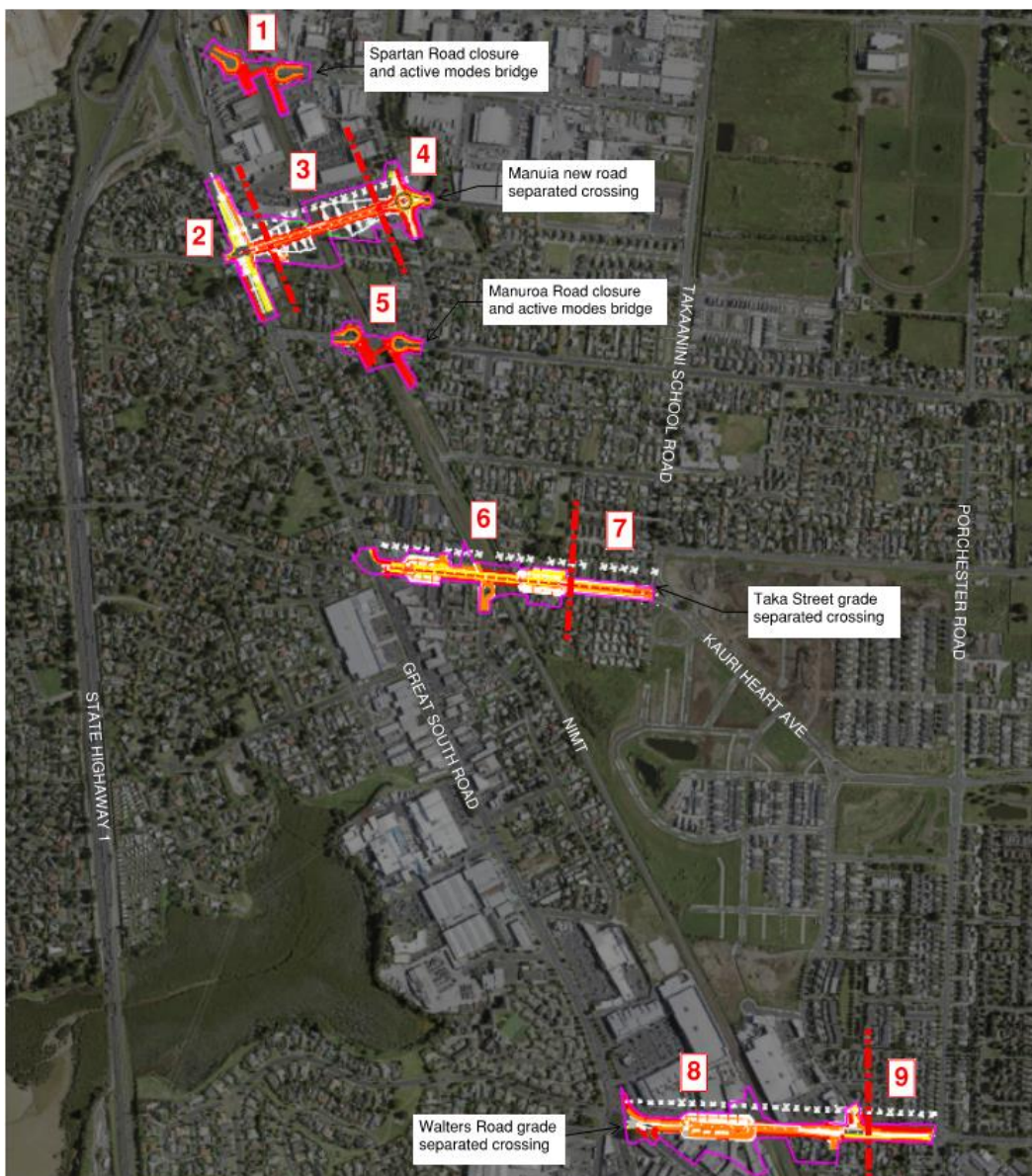


Figure 1 Takaanini level crossings costing scope of works

2 Approach to cost estimation

The cost allowances formatting has been developed consistent with the Waka Kotahi Cost Estimation Manual SM014 for a Detailed Business Case (DBC). However, no risk analysis has been undertaken.

2.1 Property

The cost of land forms a significant part of the estimate. Property cost estimates have been prepared by the Auckland Transport team on behalf of Te Tupu Ngātahi. These cost estimates have been prepared based on the land requirement (both temporary and permanent) represented by the proposed Designation boundary in the drawing set issued “For Approval”. The assumptions associated with the property cost estimates are attached in the Appendix C within this report.

The property costing approach is as follows:

- **Aggregate Property’s into parcels** – The Property team review the preferred project alignments and break the programme into appropriate parcels. This would consider type of current and future environment (e.g., Brownfields vs Greenfields), current and future zoning (e.g., rural vs commercial, FUZ vs THAB) and any particular property intricacies (could be area of reserve or challenging valuation)
- **Develop price for each parcel** – Develop a property price (for business case purposes) for the identified parcel rather than for each property. This would consider the same type of land use according to the Auckland Unitary Plan (AUP) Zones
- **Benchmark** – Use the current pricing to inform the validity of the parcel pricing
- **Review** – Property pricing reviewed by senior experienced valuation experts

Where it was found that a property requirement was on the boundary between two costing segments (refer to Appendix D), an assessment has been made as to which segment this cost should best be attributed to. It is for partly for this reason that the property cost estimates per “project corridor” in the property cost memorandums supplied do not necessarily align with those in Table 4.

The nett project property cost includes costs pertaining to both the temporary and permanent land requirement. [REDACTED]

[REDACTED]

Table 2 Assumed temporary occupation by project corridor

Project corridor	Expected construction duration (years)	Assumed duration for temporary occupation (years)	
Spartan Road closure and active modes bridge	1	1	
Manuia Road new grade separated crossing	2.5-3	2	
Manuroa Road closure and active modes bridge	1	1	
Taka Street grade separated crossing	2.5-3	2	
Walters Road grade separated crossing	2.5-3	2	

Note: The above programme information was provided by the project team. [REDACTED]

2.2 Project development phase

An allowance of 2% of the sub total base physical works has been applied for project development phase. This includes the following:

- Consultant fees, including preliminary design, implementation business case
- Client managed costs.

2.3 Pre-implementation phase

An allowance of 9% of the sub total base physical works has been applied for pre-implementation phase. This includes the following:

- Consenting 1%, including environmental court risk
- Design fees 7%, including geotechnical investigation
- Client managed costs 1%, including IWI consultation

2.4 Implementation phase

2.4.1 Implementation fees

An allowance of 6% of the sub total base physical works has been applied for implementation fees within the Implementation phase. This includes the following:

- Consultancy fees 2%
- Client managed cost 4%

2.4.2 Physical works

Costs allowances for the physical works costs have been undertaken by the quantity surveying team based on assumptions scheduled as per the Appendix C per each corridor described in the Appendix D of this report. Quantity measurements are from the concept design shown on the General Arrangement drawing as part of the Appendix F Design report of the Takaanini Level Crossings DBC.

An allowance of the following physical works items has been made:

- Environmental Compliance
- Earthworks
- Ground Improvement
- Drainage
- Pavement and Surfacing
- Bridges
- Retaining Walls
- Traffic Services
- Utility Services
- Landscaping
- Traffic Management
- Preliminary and General
- Extraordinary construction cost

2.5 Risk and Contingencies

The physical works allowances include a 25% contingency (P50) and a funding risk contingency (P95) of 20%, reflecting the uncertainty in the final form of the projects.

The property cost allowances include a 15% contingency (P50), as described on section 2.1 and a funding risk contingency (P95) of 20% which align with the physical works allowance.

These contingencies are required for cost estimation in accordance with the CEM. Definitions for those are as follows:

Contingency (P50)

A financial provision added to the base estimate to provide for uncertainty in relation to the estimate inputs and specific project threats and opportunities with a cost impact to derive the expected estimate. The 'contingency' represents the statistical mean.

Funding Risk Contingency (P95)

An additional financial provision for uncertainty in relation to the estimate inputs and project related threats and opportunities (funding risk contingency)

Advanced approach toward risk is to be undertaken on the Implementation Business Case in the future.

2.6 Escalation

The cost allowances provide an indication of infrastructure funding requirements at a base date and do not reflect programming over time. Therefore, escalation is not included directly in this report.

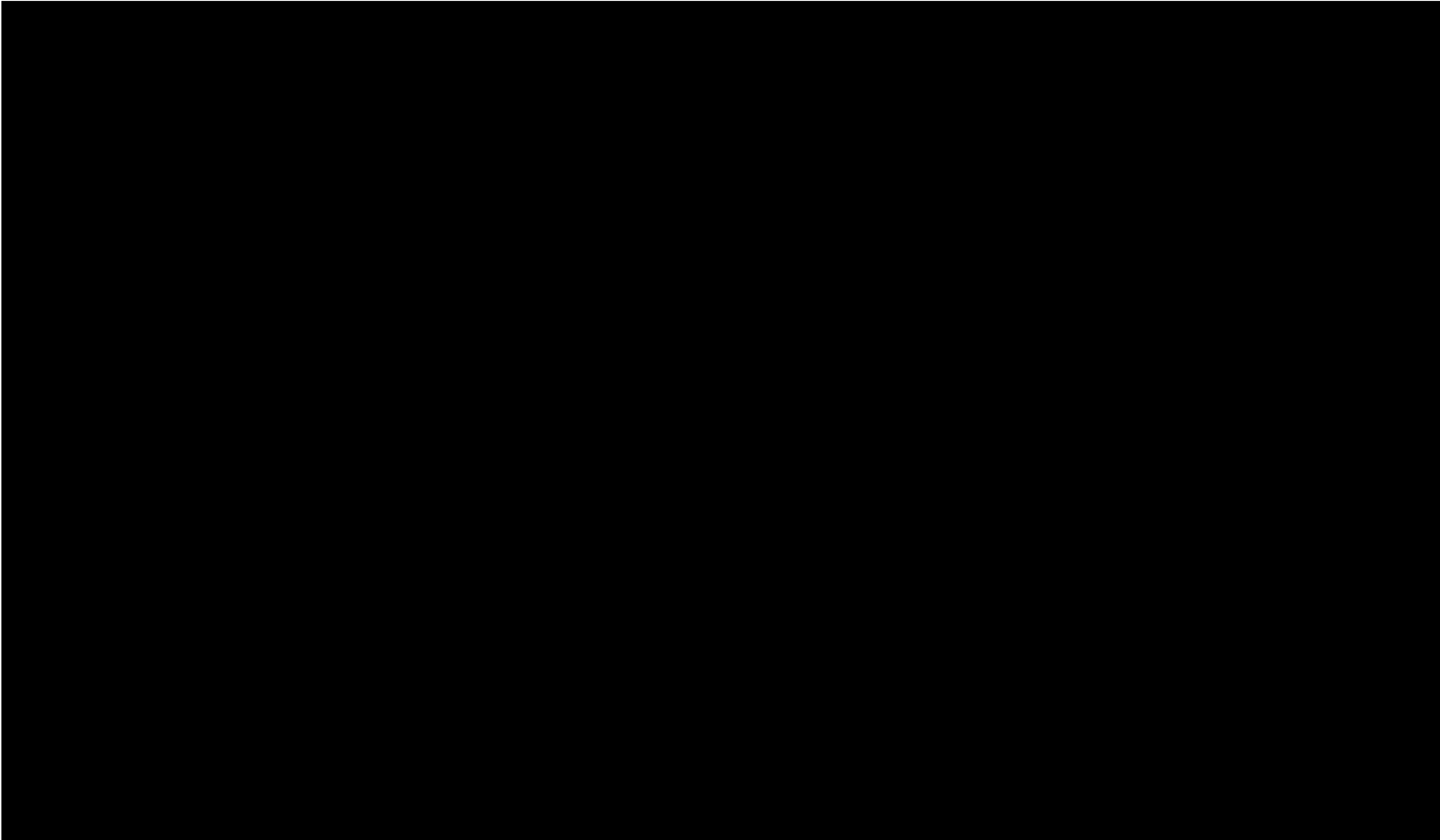
2.7 Verification

A Business Case of this scale would normally involve preparation of a parallel estimate by an independent estimator. However, as this Business Case is primarily focused on route protection and a subsequent stage will be undertaken to seek funding for implementation, the level of cost estimation accuracy is considered to be less than a typical DBC. Therefore, it has been agreed with both Auckland Transport and Waka Kotahi that the costs will be peer reviewed through 'cross verification' by a separate team within Te Tupu Ngātahi who were independent of the initial estimate preparation.

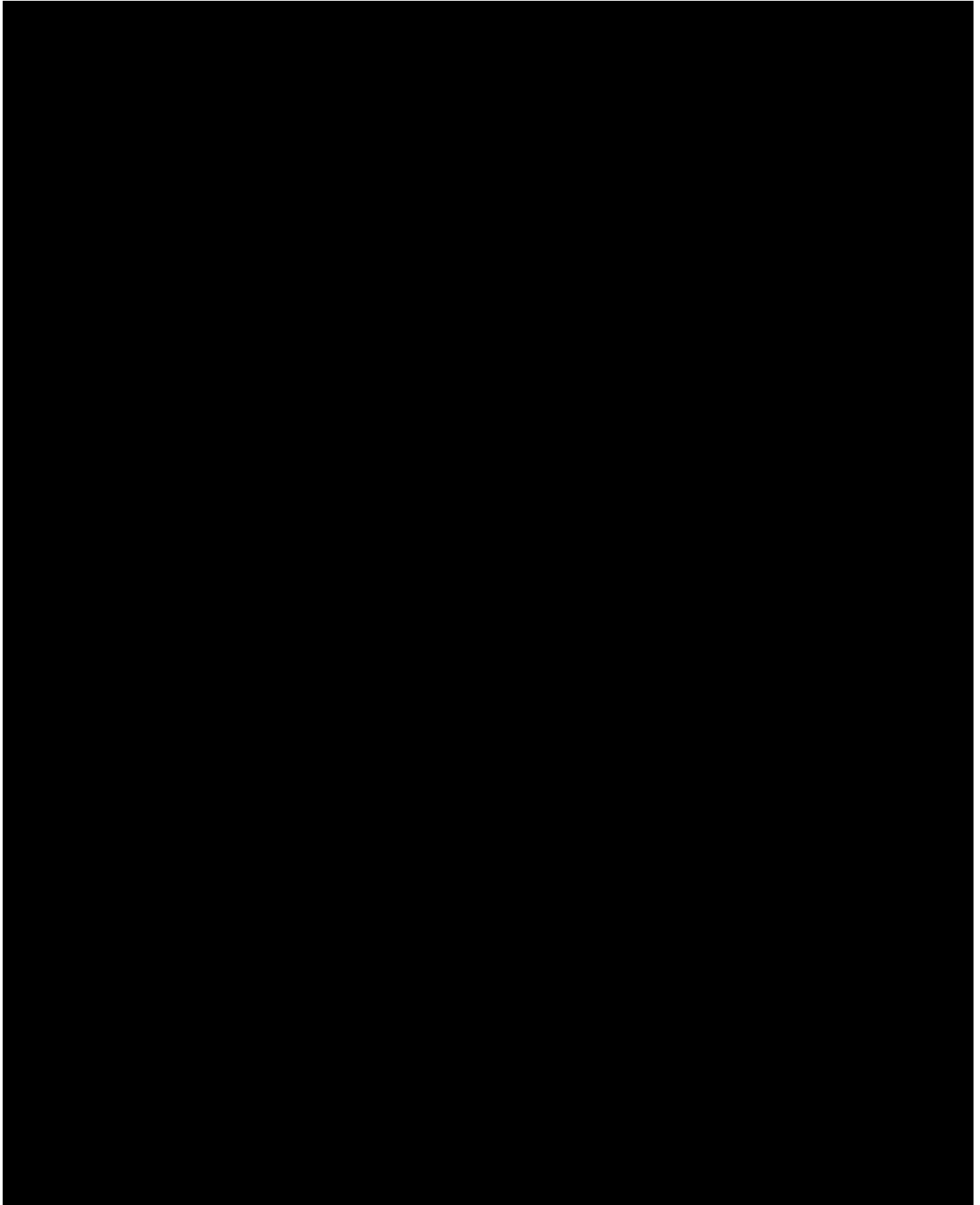
From a property point of view, verification is suited to a route protection business case to follow the approach outlined on the section 2.1 on this report involving the following:

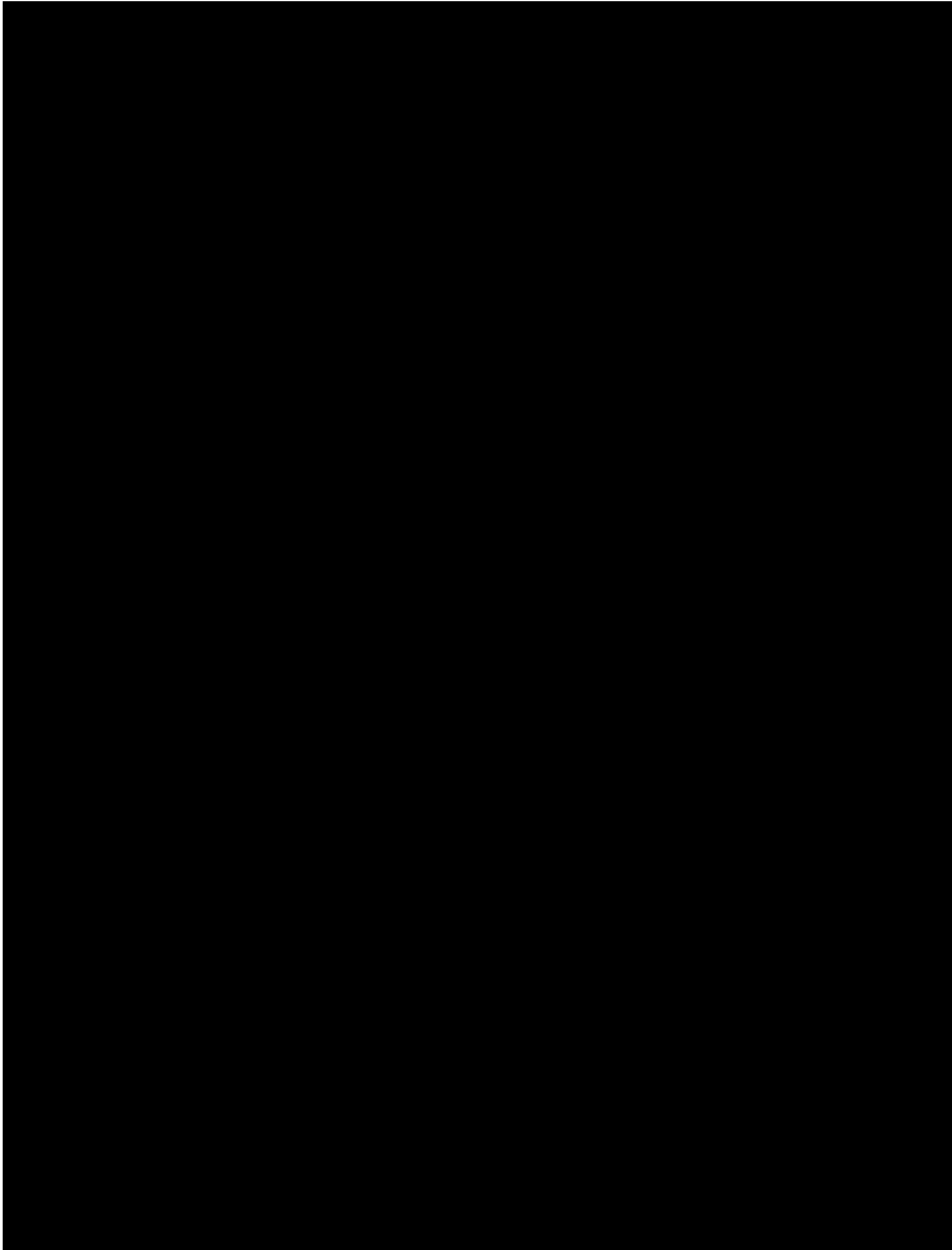
- Undertake a review of the methodology applied on the project
- Undertake a review of the rates/benchmarking used for different land uses and property types
- Internal review with AT and Waka Kotahi on property estimates

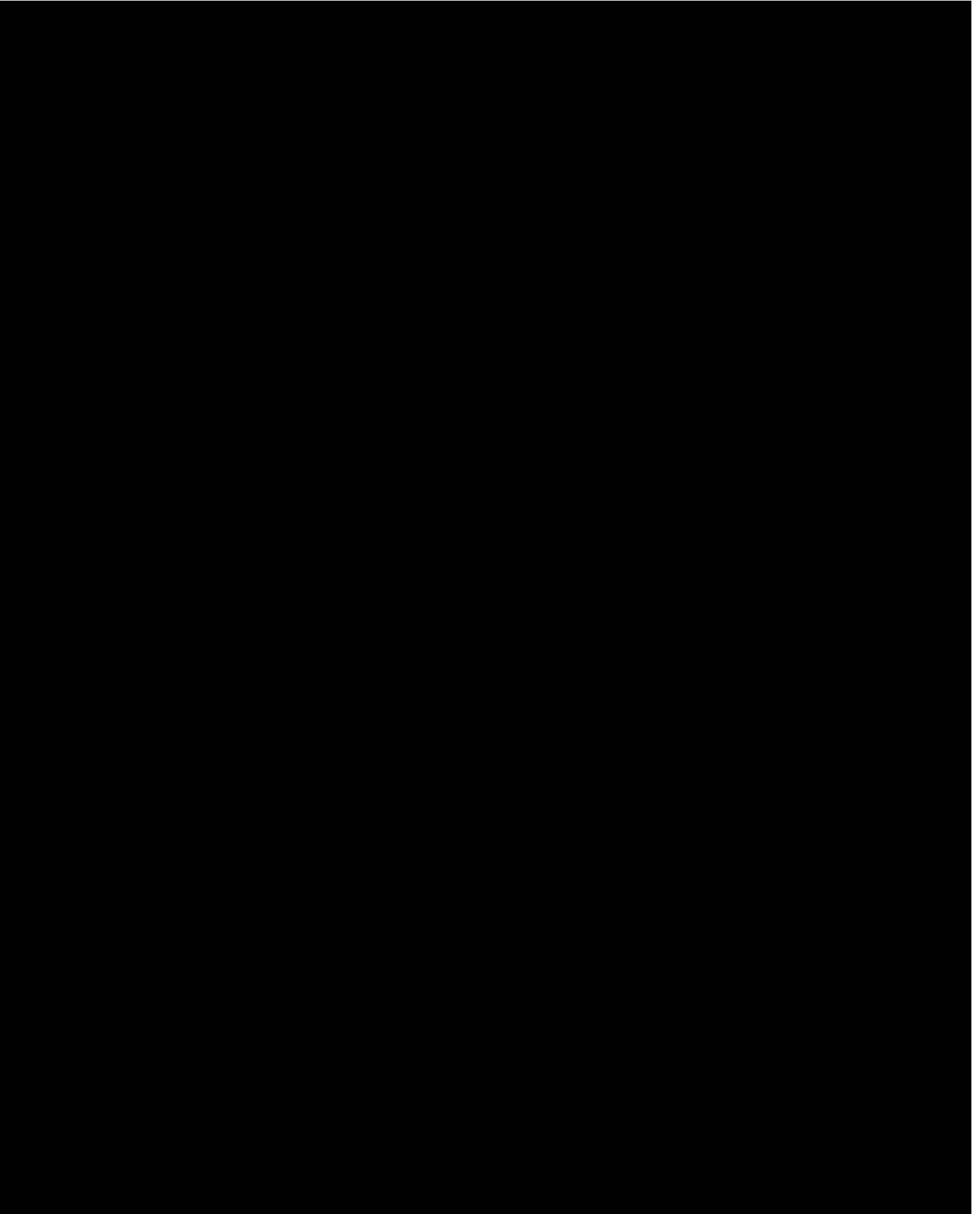
3 Cost summary

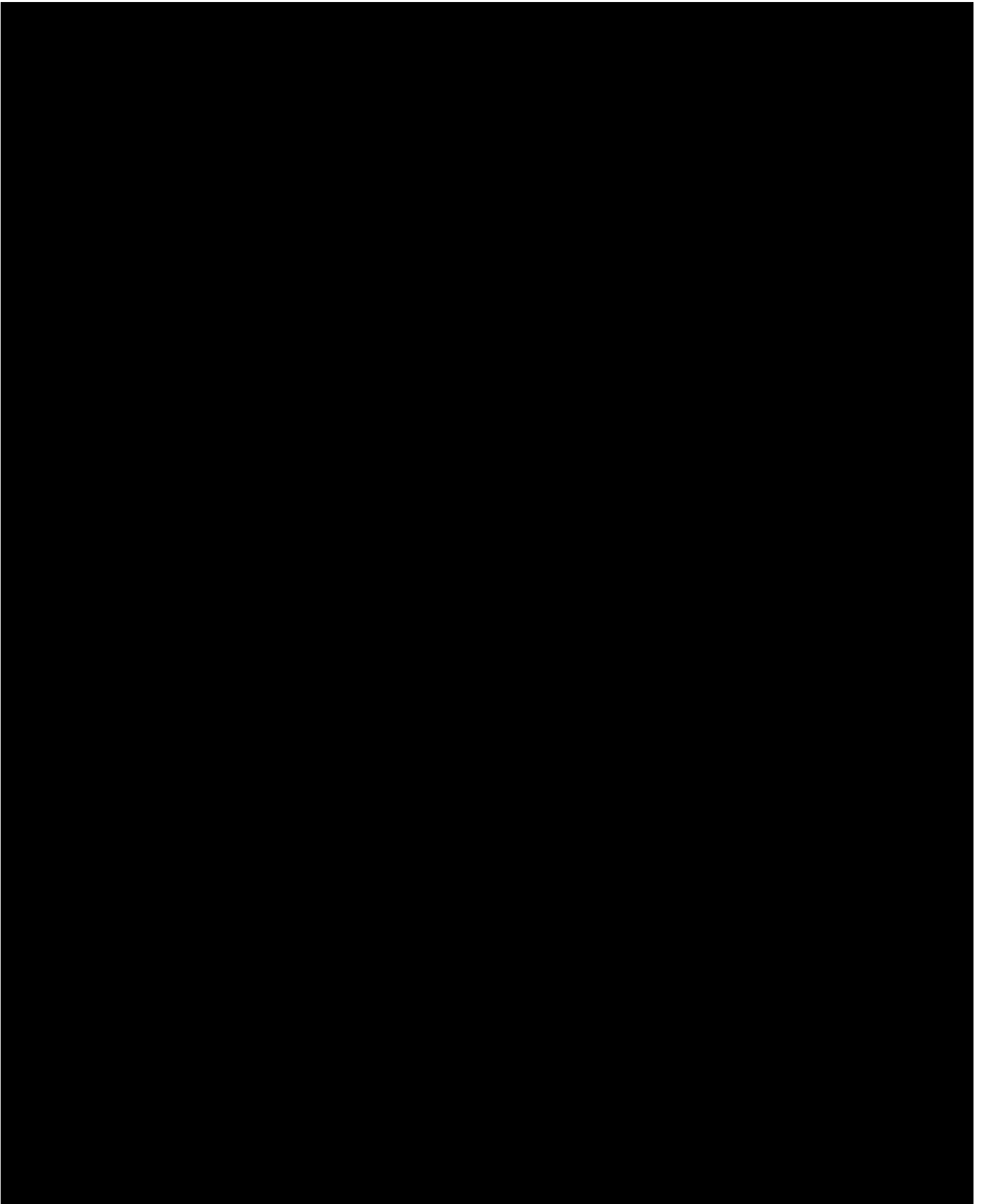


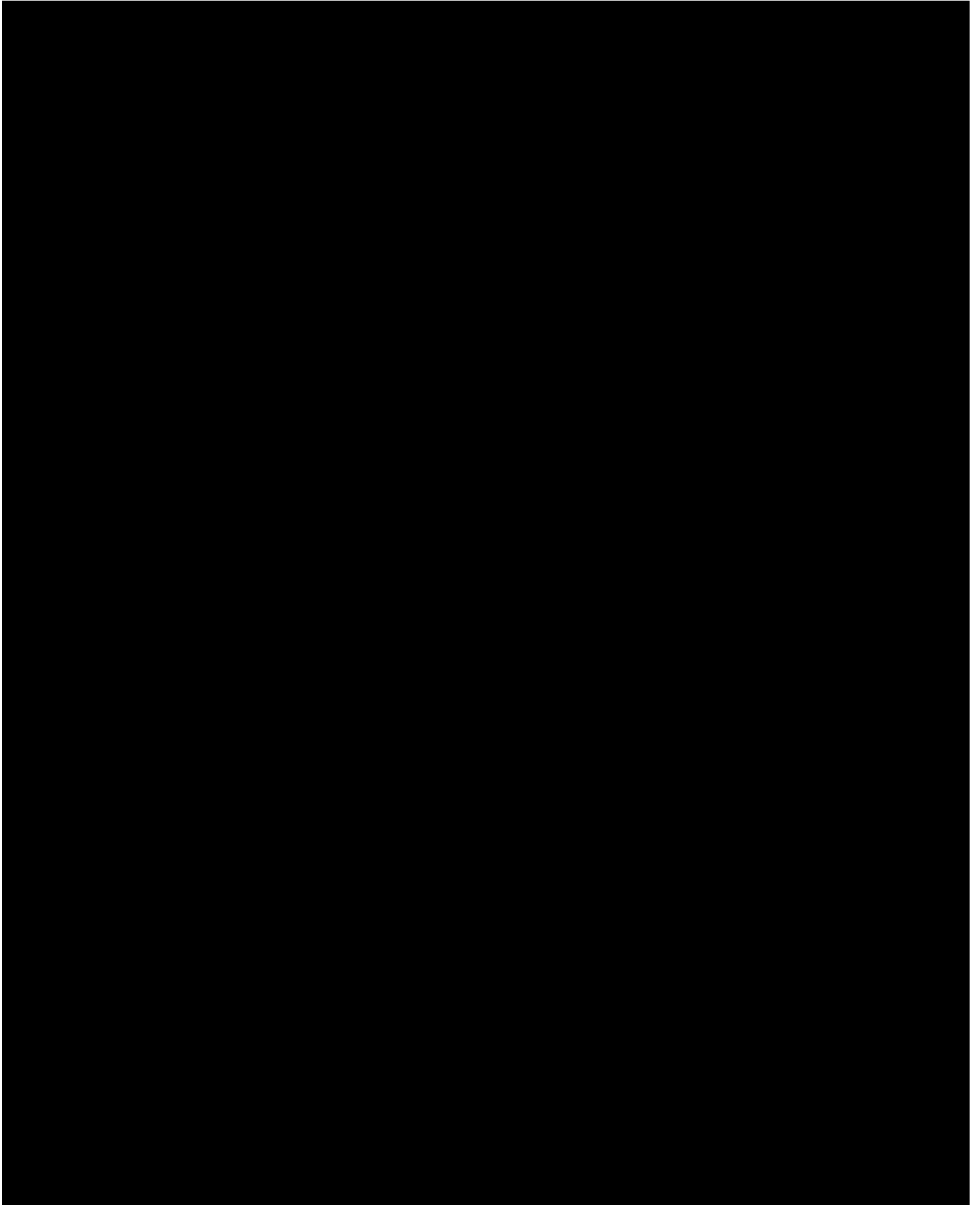
1 Appendix A Cost estimate summary forms (DBE)





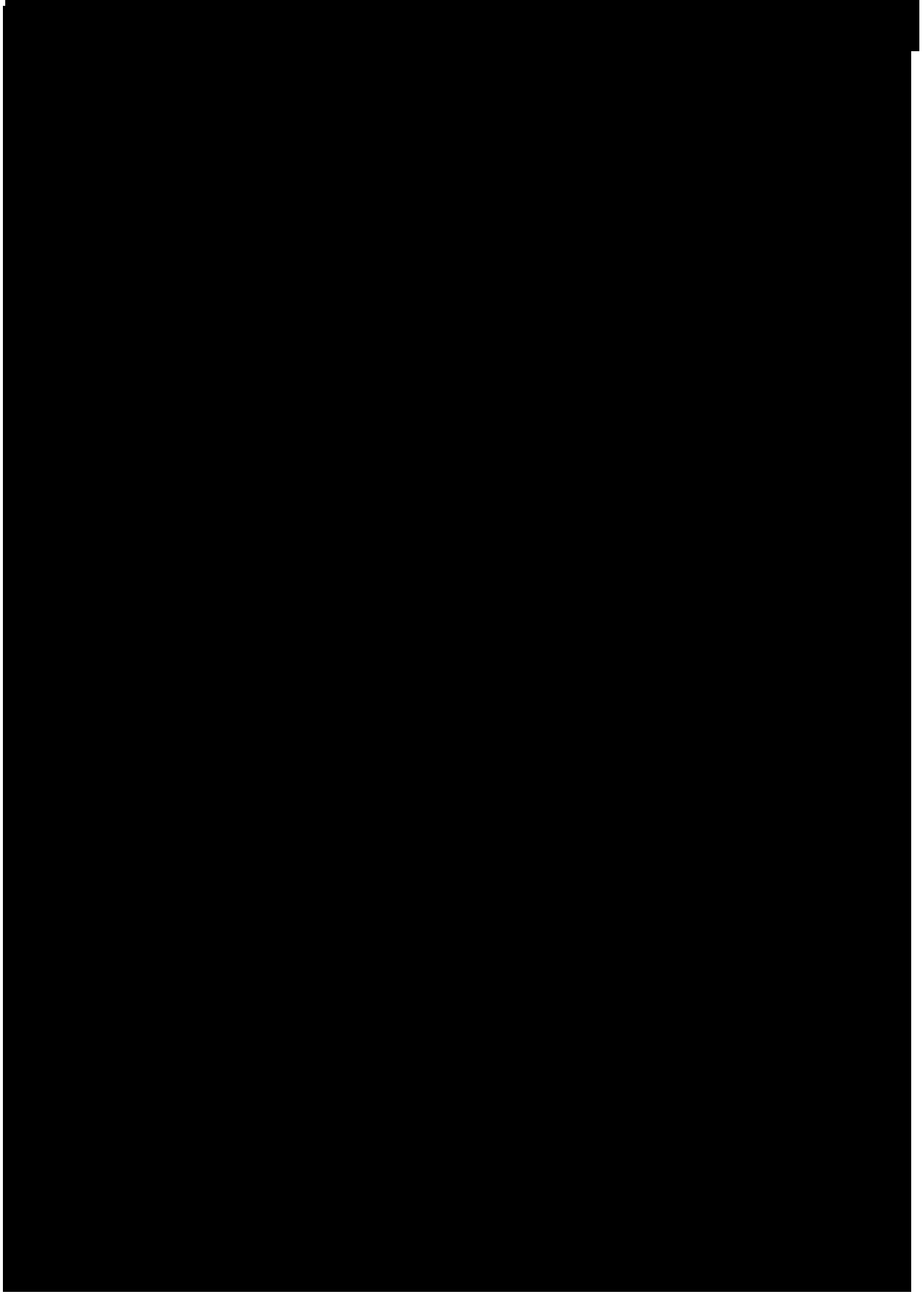


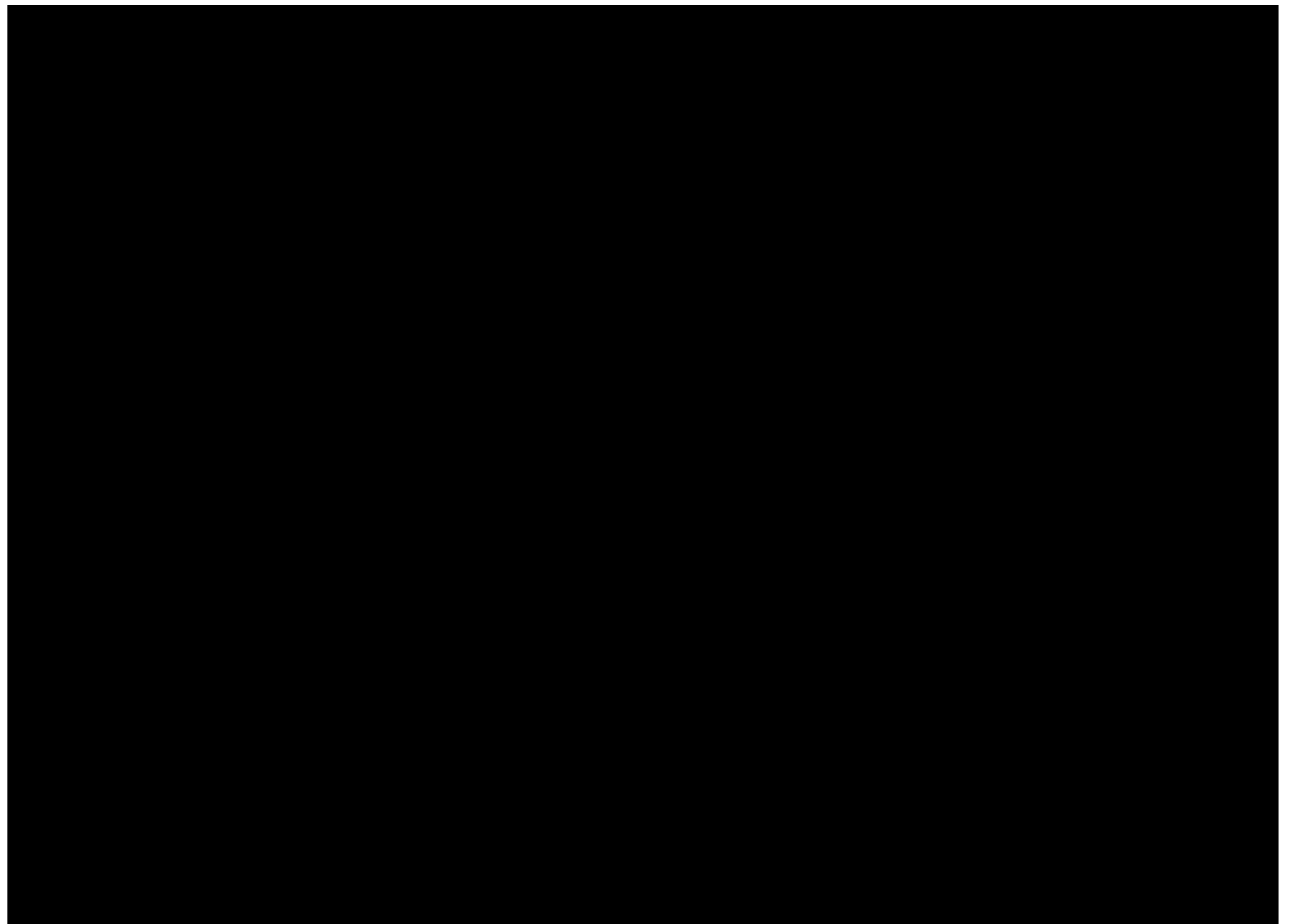


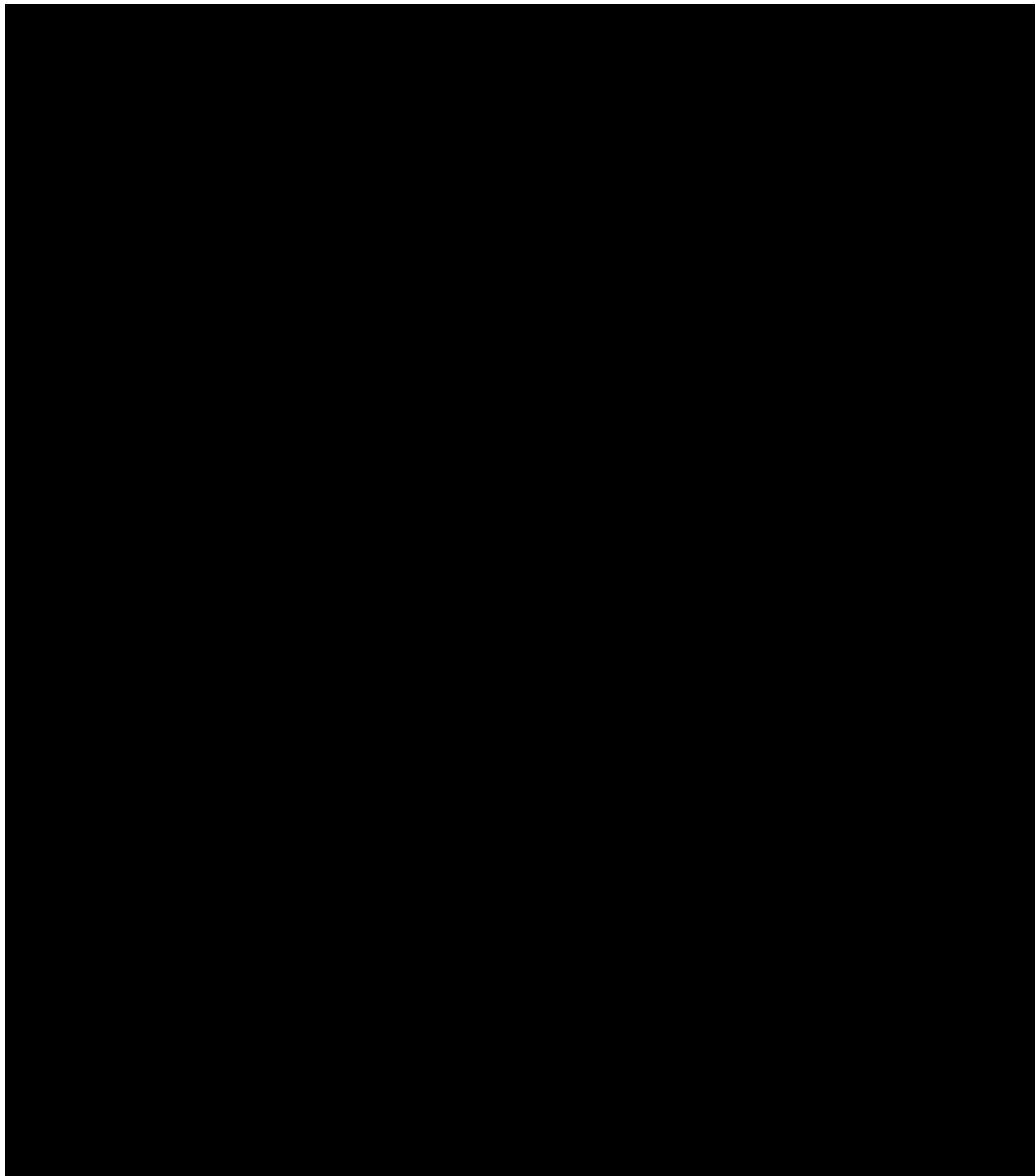


2 Appendix B Property cost estimate memorandums







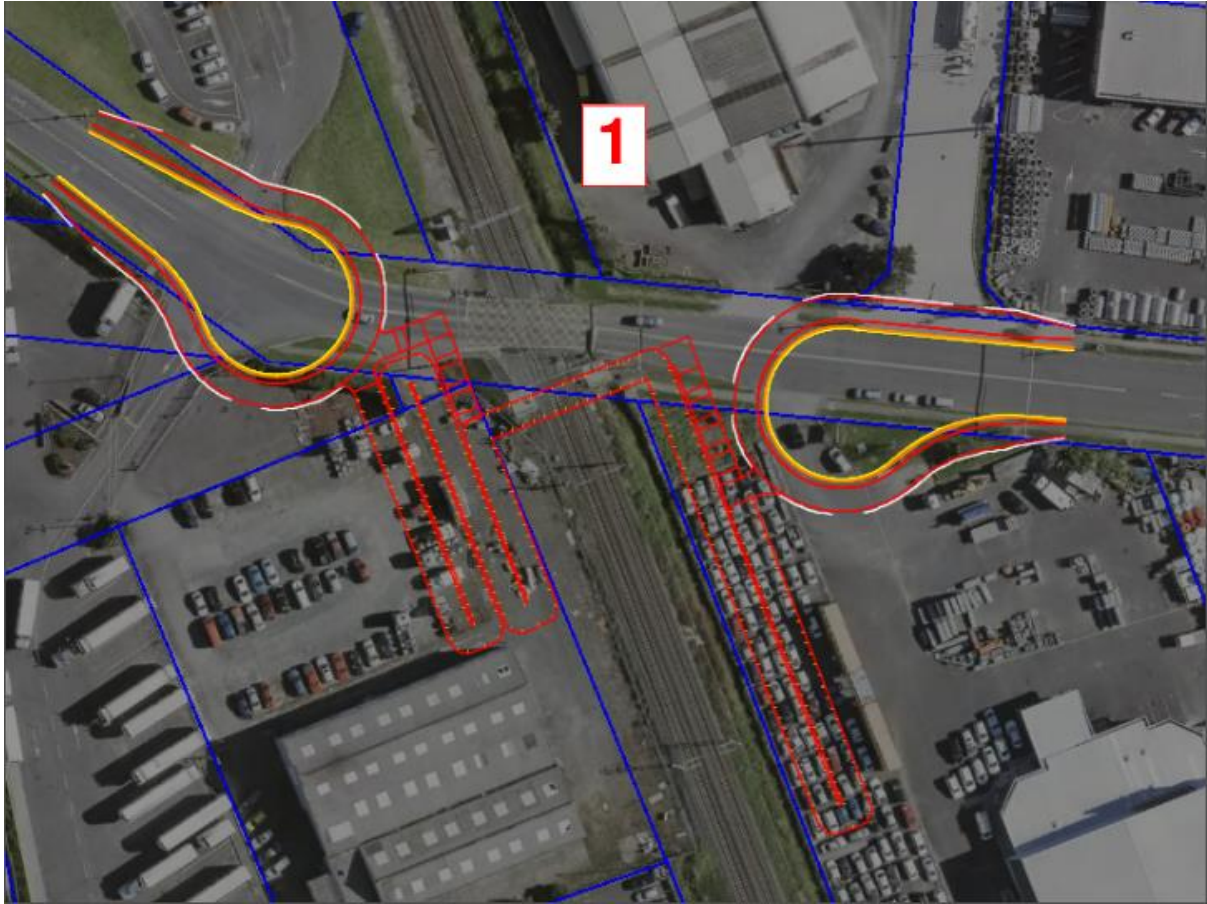


3 Appendix C Generic physical works assumption schedule

4 Appendix D Project costing segments

Spartan Road

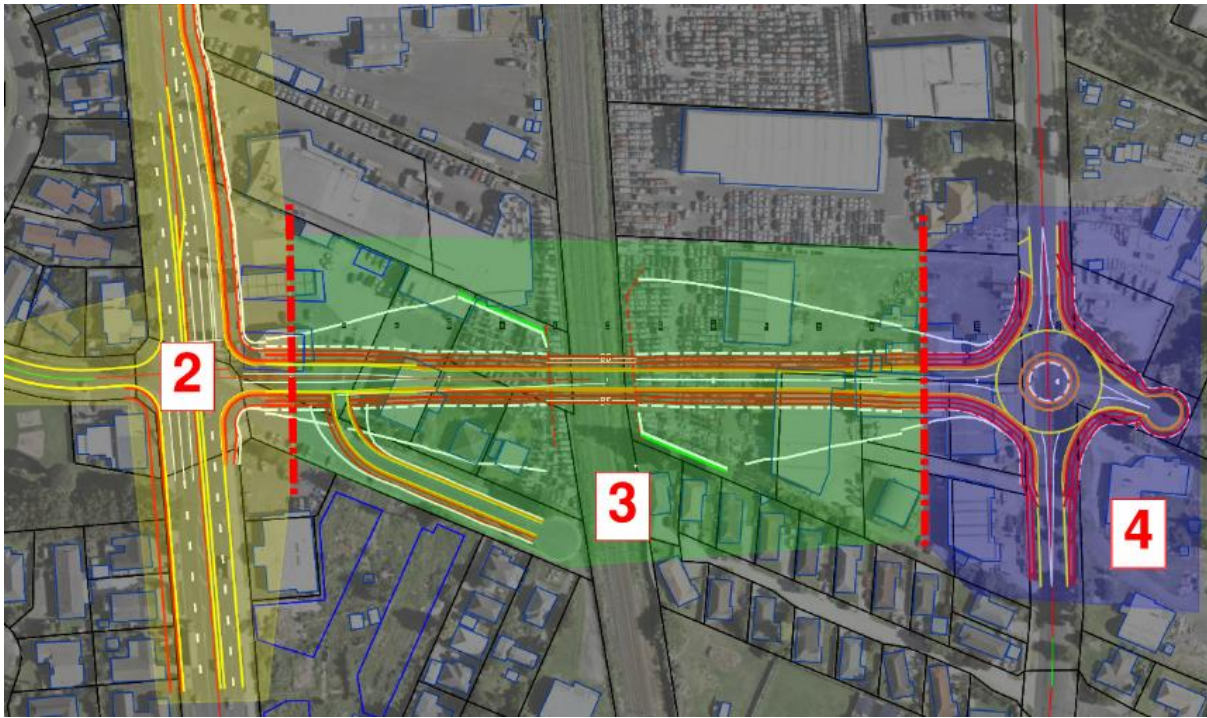
Extent of scope for physical works cost estimation:



Segment	Description	CH Start	CH End
Segment 1	The scope of works include: <ul style="list-style-type: none"> • Cul-de-sac • Active modes bridge • Ramps and stairs 	N/A	N/A

Manuia Road

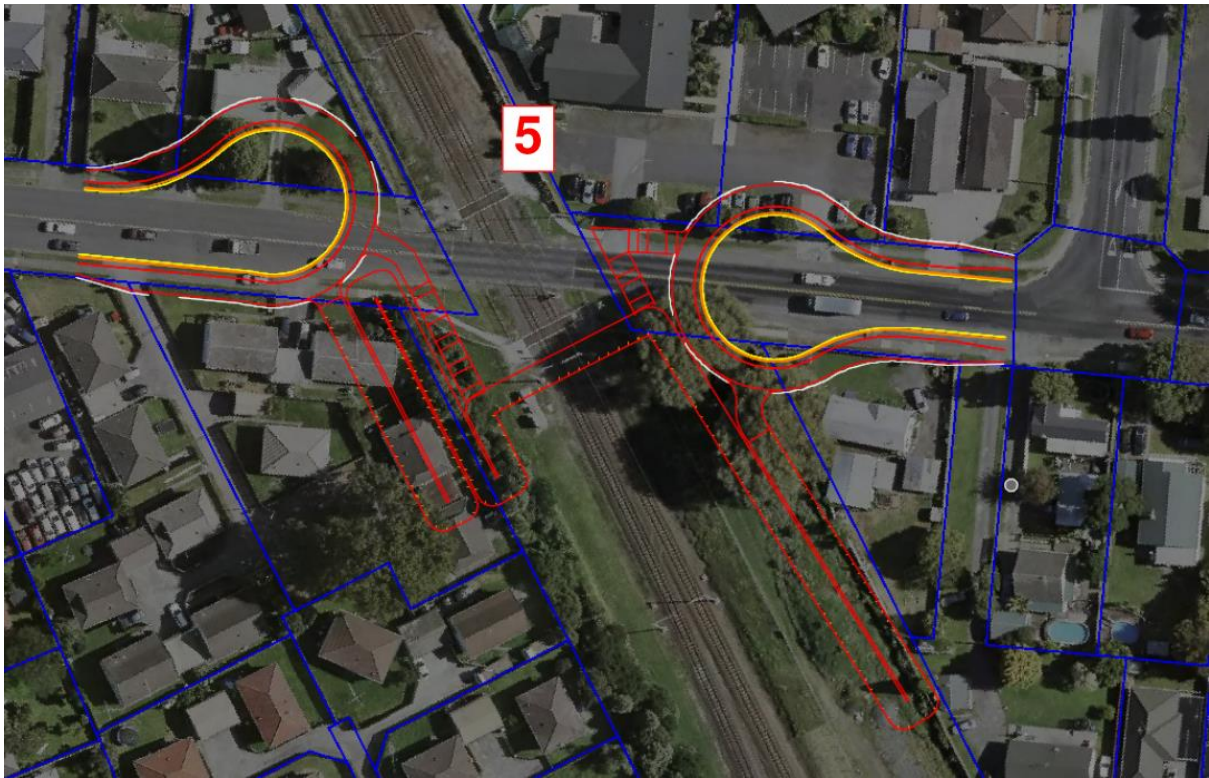
Extent of scope for physical works cost estimation:



Segment	Description	CH Start	CH End
Segment 2	Great South Road/ Manuia Road/ Challen CI signalised intersection	0	40
Segment 3	Manuia Road mid-block mainline corridor, including the accessway at existing Manuia Road and bridge	40	280
Segment 4	Oakleigh Ave/ Hitchcock Road roundabout	280	331

Manuroa Road

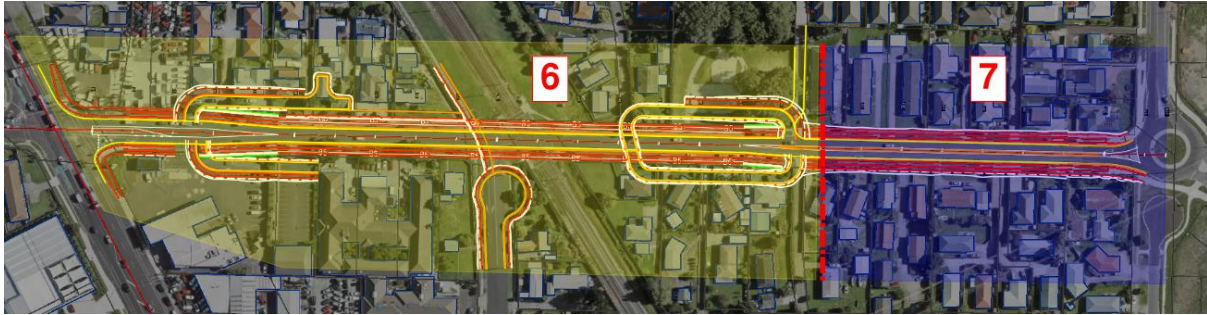
Extent of scope for physical works cost estimation:



Segment	Description	CH Start	CH End
Segment 5	The scope of works include: <ul style="list-style-type: none"> • Cul-de-sac • Active modes bridge • Ramps and stairs 	N/A	N/A

Taka Street

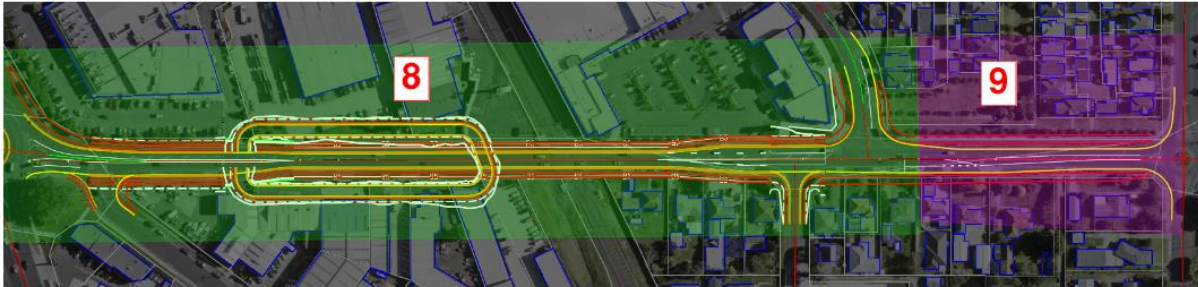
Extent of scope for physical works cost estimation:



Segment	Description	CH Start	CH End
Segment 6	Mid-block mainline corridor, accessways, cul-de-sac and bridge	0	360
Segment 7	Mid-block mainline corridor	360	530

Walters Road

Extent of scope for physical works cost estimation:



Segment	Description	CH Start	CH End
Segment 8	Mid-block mainline corridor, accessways, Arion Road intersection, Braeburn PI intersection, Tironui Road intersection and bridge	0	440
Segment 9	Mid-block mainline corridor	440	585