Appendix 1 Architectural scope - Formula block

This architectural scope is intended for architects and the wider design team working with schools to ensure an optimum design suited to their existing space and site. The architectural scope has been prepared by Brewer Davidson Architects. Assumptions and exclusions are also detailed in this section.

Preliminary outline scope

Layout option 1

Walls	Demolish a portion of wall between classrooms to form 5.1m x 2.7m finished opening. - Allow to repair floors, repair plasterboard walls and trim openings Demolish a portion of wall, door and high level windows between classrooms and cloakrooms to form 4m x 2.7m finished opening - Allow to repair floors, repair plasterboard walls and trim openings
	Remove four wet area sink units.
	Remove existing linings where required for bracing upgrade. - Reconnect timber framing with connections appropriate to bracing type - Insulate acoustically and/or thermally and re-line[1].
	Acoustic pin board from floor to minimum 2200mm (ideally the whole wall) (NRC 0.40) paint finish above to learning, wet areas and breakout spaces.
Ceilings	Line over existing soft board ceiling in learning, wet areas and breakout spaces with plasterboard lining.
	Fix high sound absorbing ceiling panel (NRC 0.85 minimum) in learning, wet areas and breakout spaces.
Floor coverings	New carpet tiles generally to learning space.
	New selected coved vinyl to wet area and toilets.
Joinery	Two SS sink benches with art troughs, cupboards under, shelves over.
	Work bench, cupboards under and shelves over (1.8m long in teacher area, not shown on plan).
	Four resource cupboards (1.2m x 0.4m x 1.8m high, not shown on plan).
Re-painting	Repaint interior face of external timber doors, windows and timber trims.
	Repaint interior timber doors, windows and timber trims.
	Repaint existing walls not covered by acoustic pin board in learning and breakout spaces.
	Repaint existing walls and ceilings in toilets.
Exterior doors and windows	Repair windows and doors so that they are operable.
	Repair or install new catches, hinges and window winders where required.
	(See also wall section on removing windows for bracing).
Hydraulics	Under bench hot water cylinder complete including cold water connection.
Heating	Allow to repair and relocate existing heaters.
Electrical	Allow relocation and minor alterations to electrical services.

Layout option 2

Walls	Demolish entire wall between classrooms to form opening.* - Allow to repair floors, repair plasterboard walls and trim openings Demolish a portion of wall, door and high level windows between classrooms and cloakrooms to form 4m x 2.7m finished opening - Allow to repair floors, repair plasterboard walls and trim openings
	Remove four wet area sink units.
	Remove existing linings where required for bracing upgrade. - Reconnect timber framing with connections appropriate to bracing type - Insulate acoustically and/or thermally and re-line[1].
	Acoustic pin board from floor to minimum 2200mm (ideally the whole wall) (NRC 0.40) paint finish above to learning, wet areas and breakout spaces.
Ceilings	Line over existing soft board ceiling in learning, wet areas and breakout spaces with plasterboard lining.
	Fix high sound absorbing ceiling panel (NRC 0.85 minimum) in learning, wet areas, breakout spaces and toilet lobby.
	New plasterboard ceilings in the toilet cubicles and lobby.
Floor coverings	New carpet tiles generally to learning space and toilet lobby.
	New selected coved vinyl to wet area and toilets.
Joinery	Two SS sink benches with art troughs, cupboards under, shelves over.
	Work bench, cupboards under and shelves over (1.8m long in teacher area, not shown on plan).
	Four resource cupboards (1.2m x 0.4m x 1.8m high, not shown on plan).
Re-painting	Repaint interior face of external timber doors, windows and timber trims.
	Repaint interior timber doors, windows and timber trims.
	Repaint existing walls not covered by acoustic pin board in learning and breakout spaces.
	Repaint existing walls and ceilings in toilets.
Exterior doors and windows	Repair windows and doors so that they are operable.
	Repair or install new catches, hinges and window winders where required.
	(See also wall section on removing windows for bracing).
Hydraulics	Under bench hot water cylinder complete including cold water connection.
Heating	Allow to repair and relocate existing heaters.
Electrical	Allow relocation and minor alterations to electrical services.

*(except the wall if including for enhancement option B5 wall in which case leave wall above 2.7m).

Layout option 3

Walls	Demolish entire wall between classrooms to form opening.* - Allow to repair floors, repair plasterboard walls and trim openings Demolish a portion of wall, door and high level windows between classrooms and cloakrooms to form 4m x 2.7m finished opening for three and rebuild new wall and door opening for new toilets for the fourth - Allow to repair floors, repair plasterboard walls and trim openings
	Remove four wet area sink units.
	Remove existing linings where required for bracing upgrade. - Reconnect timber framing with connections appropriate to bracing type - Insulate acoustically and/or thermally and re-line[1].
	Acoustic pin board from floor to minimum 2200mm (ideally the whole wall) (NRC 0.40) paint finish above to learning, wet areas and breakout spaces.
Ceilings	Line over existing soft board ceiling in learning, wet areas and breakout spaces with plasterboard lining.
	Fix high sound absorbing ceiling panel (NRC 0.85 minimum) in learning, wet areas and breakout spaces.
Floor coverings	New carpet tiles generally to learning space.
	New selected coved vinyl to wet area and toilets.
Joinery	Two SS sink benches with art troughs, bench between, cupboards under, shelves over.
	Work bench, cupboards under and shelves over in teacher area.
	Four resource cupboards (1.2m x 0.4m x 1.8m high, not shown on plan).
Re-painting	Repaint interior face of external timber doors, windows and timber trims.
	Repaint interior timber doors, windows and timber trims.
	Repaint existing walls not covered by acoustic pin board in learning and breakout spaces.
	Paint walls and ceilings in toilet.
Exterior doors and windows	Repair windows and doors so that they are operable.
	Repair or install new catches, hinges and window winders where required.
	(See also wall section on removing windows for bracing).
Internal doors and windows	New solid core timber door to toilet cubicles and glazed aluminium door with sidelight to the toilet lobby.
Hydraulics	Under bench hot water cylinder complete including cold water connection.
	New toilets and hand basins.
Mechanical	Exhaust system for toilet cubicles to exhaust out though wall.
Heating	Allow to repair and relocate existing heaters.
Electrical	Allow relocation and minor alterations to electrical services.

*(except the wall if including for enhancement option B5 wall in which case leave wall above 2.7m).

Additional enhancement options

B1	Layout option 1, 2 and 3: Install 2x 4.4m wide x 2.7m high glazed sliding door in opening to breakout rooms.
B2	Outdoor learning area - Remove two sets of concrete landing and steps to doors where deck is to be constructed. - Construct 48m2 of timber decking (or concrete pad if ground clearance insufficient). - Construct 48m2 canopy roof.
B3	Remove two bays of exterior window sets together with wall below and replace with aluminium windows and glazed hinged or sliding doors to exterior deck.
B4	Layout option 1: Install 5.1m wide x 2.7m high and a 4.4m wide x 2.7m high glazed aluminium sliding partition in opening to form large breakout room.
B5	Layout option 2 and 3: Install 7.3m wide x 2.7m high and a 4.4m wide x 2.7m high glazed aluminium sliding partition in opening to form large breakout room.
B6	Layout option 1, 2 and 3: Demolish part of the wall to form a 1.8m wide x 2.2m high opening between teacher area and adjacent small breakout space, install two glazed aluminium doors.
B7	Improve rain noise mitigation and internal acoustics - Remove soft board ceiling lining. - Nog between roofing members. - Insulate acoustically and/or thermally.[1] - Line the ceiling with plaster board lining, stop and seal. - Fix high sound absorbing ceiling panel in learning and breakout spaces.
B8	Improve acoustic separation between new learning and breakout spaces and the existing toilets. Layout options 1 and 2. - Remove existing linings to remaining walls (not requiring bracing upgrade). - Insulate acoustically and re-line. (STC 45)
B9	Improve thermal performance of envelope - Remove remaining existing linings to remaining external walls. - Insulate[2] and re-line.[3]
B10	Replace spouting with commercial grade UPVC spouting and UPVC soil grade downpipes - Replace roof with building wrap, safety mesh and Trapezoidal 0.55BMT prefinished roofing, and associated flashings. Select appropriate roof protection based on your corrosion zone and roof pitch.[4] - Paint finish downpipes to match spouting.
B11	Repair and re-paint exterior cladding.
B12	Exterior doors and windows. - Replace window frames and glazing with commercial grade powder coated single (or double where required for thermal performance) glazed aluminium windows and doors. All glazing toughened or laminated as required to NZS 4223. Trickle vents to upper most window panes. New window winders.
B13	Accessible Ramp Access - H3.2 timber decking, baseboards and joists, H4 bearers and H5 piles. - All structure separate from existing building. - Galvanised tubular steel hand rails and balustrades to ramps. - 3M grip tread tape to ramp timber decking.

[1] Care needs to be taken to avoid condensation issues caused by retrofitting insulation, particularly where building wrap and cavity cladding systems are not present. This can cause as many moisture problems as weather tightness. It is recommended that heat and moisture transfer simulations for each type of construction is carried out.
[2] As above note 1.
[3] Use: 55mm R1.4 rigid friction fitted high density semi rigid insulation batt where building wrap is not present or 90mm R2.2 friction fitted insulation batt where building wrap is present.
[4] Investigations should be undertaken before re-roofing to confirm that the existing low pitch roof and flashings have not caused weather tightness issues. Care must be taken with the selection and detailing of roofing for the low pitch roof over the cloak bays to ensure that they achieve the requirements of the manufacturer's warranty.

Toilets

Layout option 1 and 2

The existing toilets (assumed: six female, two male and 4 urinals) have been retained. Accessible toilets have not been provided, it is assumed for this option that accessible facilities are already provided for elsewhere in the school.

Layout Option 1 uses Building Code Toilet Calculation Option 3.[5]

Building code toilet calculation option 3 Single sex pans and urinals, plus accessible unisex.		
Female	Number required	Number provided
Pans	2	6
Basins	1	1
Male		
Pans	2	2
Urinals	1	2
Basins	1	1
Unisex		
Accessible facilities	1	0

Layout option 3

Student toilets have been re-configured so they are accessible from both the interior and exterior, clearly visible to ensure a high level of passive surveillance is possible and that the lobbies have two exits. The toilets are self-contained cubicles and an accessible toilet has been provided.

Layout Option 2 uses Building Code Toilet Calculation Option 1.[6]

Building code toilet calculation option 3 Unisex		
	Number required	Number provided
Facilities	3	3
Accessible facilities	1	1

For all options as toilets are being rationalised in the upgraded block, school wide toilet calculations should be carried out to confirm adequate toilet numbers are continued to be provided. It has been assumed that teacher toilets and accessible toilets are provided elsewhere in the school.

[5] Toilet calculations have been made using the 'Calculator for toilet pans, basins and urinals' (http://www.building.govt.nz/calculator-for-toilet-pans#/), based on the 'average' student population of 4 x 26 = 104 students per block.
[6] As above note 5.

Assumptions and exclusions

Individual examples of each of the standard classroom block types vary in their dimensions, materials, construction and site context, they may have been refurbished and altered over the years, or they may be in a condition that require significant maintenance work.

We have assumed:

- The buildings are in reasonable condition, structurally sound and weathertight.
- Existing walls are lined with plaster board.
- Ceilings are lined with soft board tiles.
- Buildings maybe uninsulated and may have no building wrap.
- There is no asbestos present in the building. Asbestos testing may need to be undertaken prior to further design and/or construction work as per the Ministry's policy.
- The opening windows are sufficient for natural ventilation and daylight, both for learning areas and toilets.
- Roof pitch is sufficient for trapezoidal profiled metal roofing.

As individual blocks vary, electrical, data, lighting, mechanical and hydraulics consultants have not yet provided design input into the layouts or scope of works. Rework of these systems will need to be undertaken on a block by block basis.

An acoustic consultant has reviewed and commented on the planning options. They have not given advice on material selections or mitigation of exterior noise sources should they be present. The proposed strategy for internal acoustics places the emphasis on acoustic absorption rather than acoustic separation. Where acoustic separation is required is provided with sliding internal doors they will be glazed to preserve connectivity and without seals to ensure ease of operation by young students. Laminated glass is specified to provide a level of acoustic separation. High levels of absorption will be used to 'deaden' the noise within the learning spaces which will make the acoustic separation less critical.

The enhancements will bring the buildings closer to the DQLS Guideline recommendations, however this is not confirmation that will meet those guidelines or that the building will meet current building consent requirements. A full building analysis, detailed design and scope of works may be required for this. Although some monetary sums have been allocated in the budgets, excluded from these preliminary layout designs are costs associated with:

- Building condition assessments of cladding and weather tightness.
- Detailed building survey measure of existing building.
- Hazardous materials such as asbestos.
- Thermal performance and insulation calculations.
- Aggravated thermal bridging mitigation.
- Weather tightness assessment.
- Coastal and sea spray corrosion resistance.
- Detailed design, documentation, tendering and construction observation fees.
- Building services design, including lighting, heating, hydraulics, electrical and data.
- Acoustic design.
- Fire protection design.
- Weather tightness assessment.
- Project management fees.
- Consent fees.