

SARJEANT GALLERY
INTERIM RELOCATION
38 TAUPO QUAY WANGANUI



PRELIMINARY DESIGN REPORT



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1 INTRODUCTION

1.1 The Wanganui District Council is considering the lease of premises at 38 Taupo Quay from developer Quay 11 Limited and a part lease of premises at 36 Taupo Quay for the purposes of providing temporary accommodation for the Sarjeant Gallery.

Because both buildings will be in the ownership of Quay 11 Limited the proposed Gallery premises can be considered as a single fire cell.

1.2 Quay 11 Limited propose to provide a completed building to WDC ready for “fitout” at 38 Taupo Quay and part of 36 Taupo Quay as shown. This will include strengthening to the existing building to 67% NBS including the retention of the Taupo Quay facade.

Also included will be the provision of a Non-Passenger Goods Lift, Fire Safety compliance including fire ratings/fire separation/egress and Type 4f alarm system connected through the DOC Fire Alarm panel and monitored by the NZ Fire Service/Emergency Lighting. Disabled access to Ground Floor Areas will not be provided by Q11 Limited.

Quay 11 will provide compliant toilet facilities for staff and public.

Quay 11 also propose to extend the existing building at 38 Taupo Quay by approximately 6 metres (2 floors) to provide additional needed space.

1.3 The Department of Conservation propose to relinquish part of their leased area in 36 Taupo Quay. This area will be taken over by Quay 11 who will be required to carry out all work necessary to Fire Separate the area and leave ready for WDC “fitout”.

1.4 This Report and accompanying drawings and reports set out to define the work which the WDC will need to do to set up and fit out the spaces required for the interim relocation.

1.5 Questions relating to the project should be referred to

Greg Morris
Deputy Property Manager
Wanganui District Council
Greg.Morris@wanganui.govt.nz

1.6 DEFINITIONS

A number of abbreviations may be used throughout the text

WDC	The Wanganui District Council (Tenant)
Quay 11	Quay 11 Limited (Building Owner)
DOC	Department of Conservation (Whanganui Area Office)
DLA	DLA Architects (Author of the drawings and this document)
FES	Fire Engineering Services (Fire Design Engineer).

2 SCHEDULE OF PROPOSED MATERIALS AND SERVICES

2.1 Demolition

- All demolition work shall be carried out by Quay 11.

2.2 Structure

- All structural work will be carried out by Quay 11 as part of the Leasors work. The exception to this is the roof cover to the Loading Bay 007. The concrete slab will be provided by Quay11 but the roof will be WDC's responsibility. Allow to provide a steel framed structure with timber framed flat roof Butynol covered. This platform will also be used to site HVAC equipment.

2.3 Roof Lights

- The roof lights shown in spaces 006, 006A, 006B will be provided by Quay 11.

2.4 Fire Rating

- All fire rating to structure, exterior walls, tenancy walls, between DOC and WDC, egress stairs and lobbies and goods lift – will be provided by Quay 11.

2.5 Building Extension to 36 Taupo Quay

- This structure including raised concrete ground floor (to match 36 Taupo Quay floor level) egress stair, roller shutter door, goods lift – will be provided by Quay 11.

2.6 Roof

- All work relating to replacement or repairs to roofs and stormwater disposal systems will be provided by Quay 11.

2.7 Interior Walls

Refer Architects Drawing A2.10 which defines different wall types in the "Fitout" work to be carried out by WDC.

Some of the walls to be constructed by Quay 11 also includes WDC requirements to provide for Gallery requirements, ie. exterior wall to Service Lane.

Walls shall be timber framed – generally 140x45mm with 13mm GIB Board linings. In places, as noted, 18mm plywood is required as far as an inner liner. GIB Board shall be finished level 4 and painted.

2.8 Ceilings

- The whole of the ceiling to the Ground Floor of 38 Taupo Quay including the building extension – shall be fire rated with 2 layers of 13mm GIB Fyrelite to achieve a 60/60/60 FR – all by Quay11. WDC shall paint finish.
- The ceiling to the First Floor of 38 Taupo Quay shall be the existing match lining repaired for painting by Quay11. The Extension ceiling shall be 13mm GIB Board ready for painting. Paint finish by WDC.
- Ceiling to 36 Taupo Quay shall be treated as follows:
 - Spaces 006/006A/006B/006C and part of 005D have an existing suspended ceiling which shall be retained and painted by WDC.
 - Space 002B also has existing ceilings which shall be replaced with suspended ceilings at approximately 3750mm above floor. The section of ceiling below DOC's outdoor deck above shall be fire rated to (60)/60/60 FR – 1 layer 16mm Fyrelite and 1 layer 13mm GIB Fyrelite. This work shall be done by Quay 11. Paint finish by WDC
 - The other half of the ceiling to space 002B shall be fitted with an acoustic ceiling by WDC refer 2.13.

2.9 Internal Doors and Windows

- All internal doors and window frames shall be painted Clears Grade Pinus Radiata.
- Doors shall be solid core flush paint finished doors 2.4 metres high.

2.10 Interior Trim

- Interior trim shall be Clears Grade Pinus Radiata paint finished.

2.11 Ramp Between Upper and Lower Gallery – Spaces 002B and 002

Construct ramp from timber framing – floor and balustrade walls. Walls shall be lined with 13mm GIB Toughline. Floor shall be Heart Rimu T&G flooring (demolition material reused). Refer flooring section for finish. Provide 40mm stainless steel handrails to balustrade walls. This work shall be carried out by WDC.

2.12 Heat Insulation

A higher degree of insulation is required than standard building all of which shall be provided by WDC and as follows:

- Ground Floor of 38 Taupo Quay – insulate between floor joists with R2.6 Snug Batts.
- Roof Space – 36 Taupo Quay above Space 002B and 38 Taupo Quay above Space 007 – insulate with R5 Batts.
- Remainder of Roof Spaces insulate with R2.6 Batts
- Exterior Walls to 38 Taupo Quay Ground Floor Spaces 002 and 004/004B and all exterior walls to First Floor – insulate with R4 Batts.

- Interior Walls to perimeter of Exhibition Spaces 002 and 002B – insulate with R2.6 Batts.
- Wall Type WT1 – Insulate with R2.6 Batts.

2.13 Acoustic Insulation

- Acoustic Insulation for walls is included in Heat Insulation
- Ceiling to one half of Space 002B shall be USG suspended T24 grid system, panel size 1200 x 1200mm. Ceiling tiles shall be Asona Triton 50 on E200 (50mm panel with 150mm air gap).
- Ceiling to Space 002 – Fit 50 square metres of Asona Triton 50 direct to GIB Board ceiling.

2.14 Floor Finishes

- Lower Exhibition Space 002, Reception/Retail 001 – Existing timber floor shall be finished by WDC. Same finish is required to ramp and landing. 002A. Repair timberwork as required, sand to a suitable standard and finish with 4 coats of satin polyurethane.
- Upper Exhibition Space 003 – Existing concrete floor shall be finished by WDC. Repair existing surfaces as necessary / fill saw cuts and damaged areas / polish to a suitable standard / seal with Uracyl 403 and 2 coats 402.
- Concrete floors to spaces 005, 005A, 005B, 005C, 005D, 006C, 008 – Clean down, repair as necessary and seal with 1 coat Cemseal.
- Floors to the following spaces 001A, 001B, 004, 004A, 004B, 006, 006B – Prepare floors and cover with 6mm commercial grade rubber backed nylon carpet tiles.
- Floors to 003, 003B, 006A, 006D, 006E – prepare floors and lay 2mm commercial grade vinyl.
- Floor to 007 - clean down existing timber floor and leave as is.

2.15 Fittings

No allowance is required for fittings.

3 FIRE DESIGN



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12 September 2012

DLA Architects
P O Box 4078
Wanganui 4541

Attention: Bruce Dickson

Dear Bruce

**Ref: Preliminary Design Analysis
Sargeant Gallery Interim Relocation
38 Taupo Quay, Wanganui.**

The following is a preliminary list of the main Building Code requirements to upgrade the building at 38 Taupo Quay, and the rear of 36 Taupo Quay, Wanganui. The method used to determine these requirements is the acceptable solution fire documents, C/AS1, D1/AS1, G1/AS1 and NZS 4121: 2001 Design for access and mobility – Buildings and associated facilities

Building Act 2004 Section 75

To permit openings between 36 and 38 Taupo Quay, which is across two titles, the Territorial Authority must state in the project information memorandum that, as a condition of the grant of a building consent for the building work to which the project information memorandum relates, 1 or more of those allotments specified by the territorial authority (the specified allotments) must not be transferred or leased except in conjunction with any specified other or others of those allotments.

Fire Requirements

1 Fire alarm

The existing Type 4f automatic fire alarm system that is currently installed in 34 and 36 Taupo Quay, Wanganui, is to be extended to 38 Taupo Quay, Wanganui. In order to give additional protection to valuable artwork, this system is to be monitored by the New Zealand Fire Service.

2 Emergency lighting

Provide the following emergency lighting, as shown on the plan on page 3;

- 6 illuminaires are required to be placed in the following locations;
 - Above the two sets of internal stairs.
 - Above the external set of stairs at the rear of the building.
 - Above the internal ramp.
 - Above the ramp at the front of the building.
 - Above the external steps at the front of the building.
- 5 illuminated exiting signs are required in the following locations
 - 2 on the ground floor.
 - 3 on the first floor.

These are to be placed above each final exit door, and at the entry to each set of stairs, and above any main door on the escape route.

3 Fire rating

Provide a 60/60/60 fire separation and -/60/60Sm fire doors to the following;

- The underside of the first floor and stairs, including the supporting elements.
- Between the front stairs and the ground floor.
- To the rear stairs and at each floor level.
- The wall between DOC and the Gallery. Please note that the wall between the car parking area already complies with this requirement.
- The lift shaft and lift doors.

4 Doors

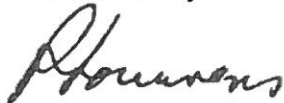
All doors which are likely to be use in an emergency by more than 20 people must open in the direction of travel, therefore the two sets of double doors at the front of the ground floor must be altered.

Access and facilities for people with disabilities requirements

- 1 One set of stairs, the ramp at the front of the building and internal ramp on the ground floor must all comply with D1/AS1 for accessibility. The accessible stairs and ramps must have a handrail on both sides. Except when step are only two high, all stairs and steps must have a hand rail on one side.
- 2 The one toilet must be accessible and comply with G1/AS1 figure 6.

Should you wish to discuss this further, please do not hesitate to contact me.

Yours faithfully

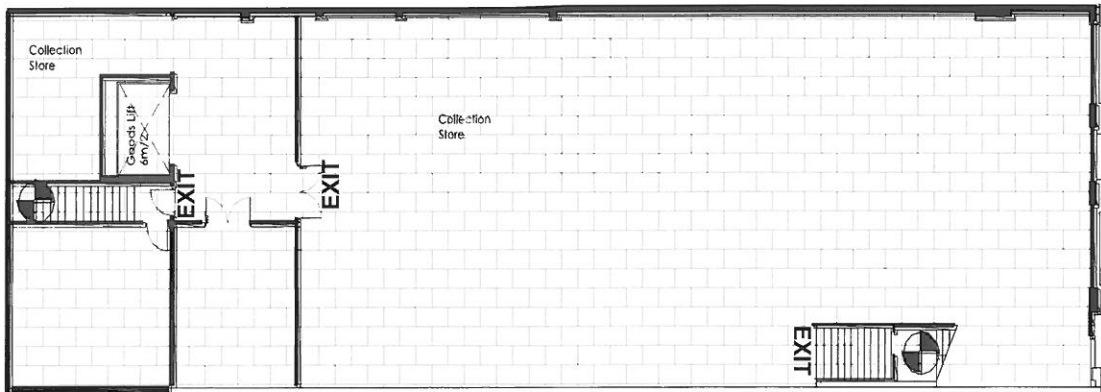
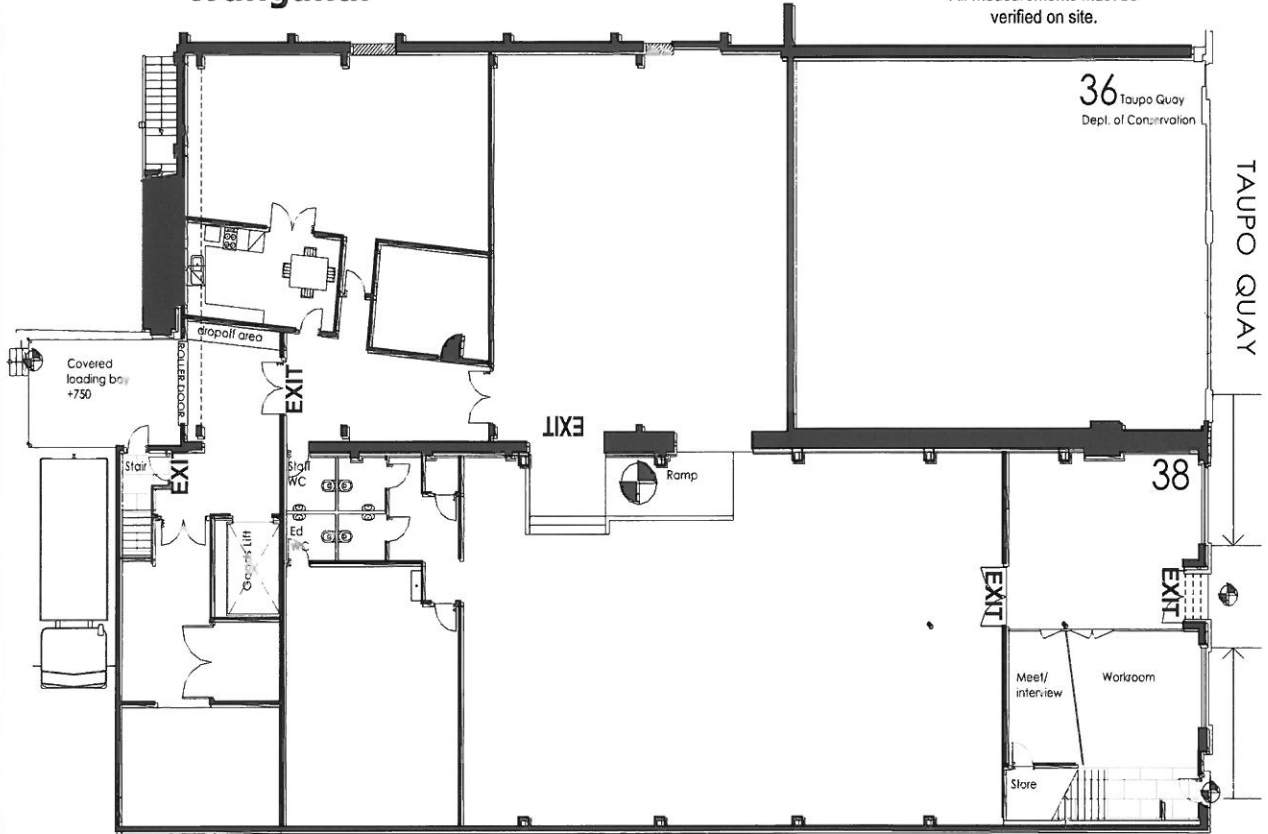


Phillip Louwrens

Sargeant Gallery Relocation 38 Taupo Quay Wanganui

0m 8m

SCALE
All measurements must be verified on site.



Provide illuminated exit signs

Existing emergency lighting illuminaire

EXIT



Provide a 60/60/60 fire separation

Provide the underside of floor and stairs with a 60/60/60 rating.



4 SERVICES REPORT

Note: The Service Report includes two options for HVAC. Estimates of Costs should be prepared for both options.

Option 2 is the one to be included in the overall Project Cost Summary.



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environment
engineering

Sarjeant Gallery Interim Relocation

Building Services
Initial Design Report

Rev: A

18 September 2012

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1 EXECUTIVE SUMMARY

This report describes the proposed building services installations including, heating and air conditioning ventilation, electrical services and hydraulic services (hot & cold water and drainage) associated with the Sarjeant Gallery project.

The purpose of the report is to highlight what the intended services are, the information is provided to enable an initial costing to be undertaken on the proposed building by the QS.

We have not considered any risks posed by the building location to the river.

The main features of the scheme are:

Mechanical Services:

- Tempered mechanical supply ventilation serving staff areas to ensure adequate fresh air under all conditions
- Additional local comfort cooling will be provided to certain staff areas as required
- Mechanical extract systems serving the toilets and print / photographic areas
- Close control mechanical systems serving the Gallery to maintain acceptable internal temperature and humidity conditions we have described two system, best quality solution and a more cost effective approach, due to the short term nature of the occupation.

Electrical Services:

- A new three phase power supply and main switchboard serving the Gallery. Further investigation is required to determine the requirements and most suitable location of this connection with the street
- Small power & data distributed throughout both buildings. Cable routes will be exposed high level in the Gallery. Allow for 10 ceiling mounted power outlets per gallery display space.
- Flexible Gallery Exhibition lighting appropriate to the intended use of each space.

Communications

- Gallery - UTP Cat 6a structured cabling run throughout the building, with connection points in the form of wall outlets, ceiling outlets and floor boxes.
- New communications cabinet to be installed within the ground floor office (45Ru)
- Data cabling to ceiling mounted client supplied wireless LAN devices.

Security Alarm System

- Security systems for buildings, complete with remote monitoring, and battery back-up
- PIR coverage plus keypad activation/deactivation
- Reed switches fitted to all external doors
- Chexit delayed door device (electronic) fitted to upstairs gallery building fire exit door. This is linked back to the alarm and sounder at gallery reception. The Chexit device will delay the egress of a potential art thief by 5 – 15 seconds.

PA System

- Client to confirm if a Public Address/Announcement System is expected

Access Control & CCTV

- CCTV not included
- Access control provisional sum allowance see section 3.5

Hydraulic Services: - All work to be undertaken by Quay 11 Ltd

- Water supplies and drainage services to suit the new toilet & kitchenette layouts
- Water saving fittings and environmentally friendly materials
- New local electric hot water heaters

2 MECHANICAL SERVICES

The section covers all aspects of Heating, Ventilation and Air-conditioning (HVAC) systems for the scheme.

2.1 Building Envelope Performance

2.1.1 Code Compliance

The building needs to comply with clause H1 of the building code and therefore the thermal performance of the building envelope as a minimum needs to be designed to comply with NZS 4243:1996.

We recommend insulation levels well above the minimum code requirements in order to, reduce plant sizes and reduce energy consumption.

2.1.2 Gallery - Exhibition Spaces - Construction

A general requirement for a close controlled environment ventilation system is that the external influences are kept to a minimum, both for control and for energy reduction (running cost) reasons. This requires that any air gaps and cracks to outside are sealed and both the detailing and construction are carried out to a high level of workmanship.

To prepare any space for tight temperature and humidity control, one of the main requirements is the provision of a sufficient vapour barrier. The proposed roof and wall construction should adhere to the following requirements

1. Very high levels of thermal insulation
2. Any vapour barrier must be continuous, without breaks or tears.
3. All joints, corners details and joints between the roof and walls must be detailed such that they form a permanent air-tight seal. This includes penetrations through the roof and walls
4. Doors and openings should be weather-stripped and air-locked. Any crack or opening around a door will admit vapour.

Assumptions:

Concrete type precast walls are not an option due to the additional structural weight although the fire rating of the wall may change this?
The key aspects to the fabric are airtightness and insulation, and the following is based on a pragmatic approach due to the length of time the gallery will exist in this building.

Roof

With respect to the roof construction we would recommend trying to achieve a R5 construction. With pink batts this would be a 210mm depth installed over a ceiling. The roof is the most important aspect of the fabric to get right.

Walls existing

Again we would like to recommend R5 for the walls, but due to the nature of the building and it's occupancy time then this could be reduced to R4 using a 140mm batten system and insulating filling the gap with pink batts R4 140mm. We would also recommend a ply layer to the outside of the framing, this will assist as a vapour barrier significantly reducing the infiltration through the wall. If the inside layer is also sealed with a ply or mdf layer, then we would recommend that the external layer have a vapour membrane like Pro Clima Soltex, it's important a high performing membrane is used.

<http://www.proclima.co.nz/weather-tightness-measure-water-tightness>

An ideal light weight wall construction would be something like this:

Outer cladding, drain cavity, soltex layer, 140mm frame full of insulation, Intelo vapour barrier, 40mm batten to mdf internal wall. The 40mm would act as a service cavity for power and data maintaining integrity of the vapour barrier.

Floor

Its difficult to decide what can be done with the floor, if access is available below the floor then we should install ridged insulation between the joists. We will need to discuss options further, but should allow at least this for now in the costs. Any new slab should be insulated with a damp proof course.

2.2 Design Data

In order to establish a scheme, estimate peak plant loads and perform a preliminary plant selection; the following design conditions have been assumed:

2.2.1 Design Weather Data

This is based on the data given in 'Design Temperatures for Air Conditioning' by NIWA 2011. The location has been selected as Wanganui, Spriggins Pk Ews.

The figures indicated as ** below indicate temperatures that will not be exceeded (in summer) or below (in winter) for more than 1% of the time.

Winter	D.MIN1%** (Extreme minimum temperature is -1.8°C)	2.5 °C
Summer	D.MAX1%** D.WET1%** (Extreme maximum temperature is 29.8°C)	26.4 °C 21.2 °C

2.2.2 Design Assumptions

The HVAC systems will be designed based on the following criteria:

Outdoor air: 10 l/s/person via mechanical ventilation or natural ventilation with net openings of no less than 5% of floor area to comply with NZBC

Occupancy: TBC

Equipment: 10 W/m² (or 15W/m² for Gallery Exhibition)

Lighting: 10 W/m² (or 15W/m² for Gallery Exhibition)

Noise Levels: NR 35 (Staff Offices)
NR 40 (Toilets, Workshop etc)
NR30-35 (Gallery Exhibition)

2.2.3 Internal Design Conditions & Occupancies

Space	Summer Temperature Condition	Winter Temperature Condition	Occupancy
Gallery Exhibition Areas	20°C +/-2°, 55% RH +/-5 Option1	20°C +/-2°, 55% RH +/-5 Option 1	30 people
Gallery Staff Offices	21°C +/-2°	21°C +/-2°	1 per 10m ²

Prep Room	20°C +/-2°, 55% RH +/-5 + Extract Ventilation	20°C +/-2°, 55% RH +/-5 + Extract Ventilation	1 per 10m ²
Workshop, loading area	Temperature not controlled Extract Ventilation	Temperature not controlled Extract Ventilation	1 per 10m ²
Toilets	Temperature not controlled Extract Ventilation according to AS1668.2	Temperature not controlled Extract Ventilation according to AS1668.2	NA

The information tabulated above is based on *AIRAH and **CIBSE design guidelines and recommendations where HVAC plant is provided

*Australian Institute of Refrigeration, Air-conditioning & Heating
 **Chartered Institute of Building Services Engineers

2.3 Proposed Mechanical Systems

2.3.1 Staff Areas

The staff areas will be provided with fresh air via roof mounted fans, the spaces will be conditioned with heating and cooling in option 1, but a lower cost electric only heating for option 2. Direct electric heating would prove cost effective in this situation due to the time span of occupation, and assuming that cooling is not a requirement.

2.3.2 Toilets, Cleaner's Room, Kitchens

A mechanical extract system is proposed to service these spaces. Air flows will be designed according to AS1668.2. Make up air will be drawn out of the adjacent staff room/corridor via door grilles and/or door undercuts. Heating is not provided.

2.3.3 Gallery – Loading bay & Workshop

A mechanical extract system is proposed to service these spaces, no direct conditioning is proposed

2.3.4 Gallery - Exhibition Spaces

To maintain a close control environment in the Exhibition and Preparation Areas, an air-conditioning system will be provided to supply air that is conditioned as required to maintain internal conditions within the specified ranges (refer to Section 2.2.3).

Option 1

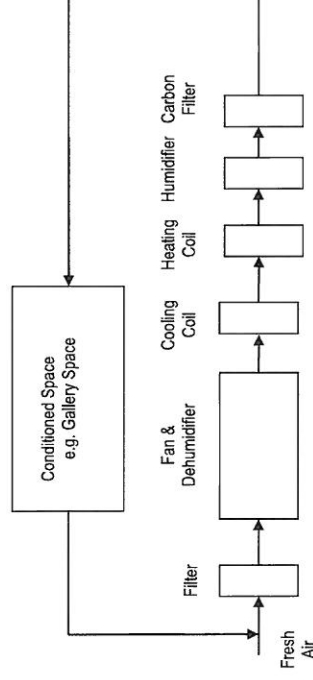
The plant comprises pre-filters, a high performance carbon filter, fan, dehumidifier with desiccant wheel, ultrasonic humidifier, chilled watercooling coil and LTHW heating coil.

The system will perform as follows:

In summer, cooling and dehumidification is required. Return air from the space and a small proportion of fresh air is driven through a rotating wheel with desiccants in the dehumidifier. The humidity of the air is absorbed in the desiccant. The humidity of the leaving air is controlled by the rotation speed of the wheel. After the drying task is complete, the desiccant is regenerated via heat. Then the desiccant is ready to dry more air. As the drying process increases the temperature of the air an after cooling coil is provided.

In winter with dry outside air, humidification and air heating is required. An ultrasonic humidifier and reheat coil is provided. Although more expensive than a steam humidifier, the ultrasonic humidifier will have greatly reduces running costs. Heat will be recovered within dehumidifier unit to reduce the energy consumption of the regeneration process.

A basic schematic of the system is given below:



Typical Close Controlled Environment Ventilation System

The ventilation system is proposed to run 24/7 throughout the year. A control system will monitor the space conditions and provide historic data showing the gallery conditions.

The air is distributed to the spaces by a ductwork system and slot or linear supply air grilles with a low face velocity.

The ground floor will be served via exposed ductwork diffusers, whereas the first floor will be provided with high level air system above the ceiling serving in ceiling diffusers.

This system described above will act to positively pressurise the Exhibition Spaces to limit the ingress of un-conditioned air.

2.3.5 Gallery - Exhibition Spaces - No Duty/StandbyPlant

Although Galleries and Archives often have full 100% standby plant to operate during maintenance or fault of the main plant, the proposed scheme has no allowance for this due to budget restraints.

To limit the risk, the intention is that BMS provides an alarm in case of any plant fault. Alarms are proposed to be sent as email, text message or voice message to a dedicated mobile. We would also recommend that the maintenance contract is such that this plant has priority status and 24/7 call out.

Should plant fail, the **highly insulated and airtight construction** is critical to help slow the rate of change of internal conditions, which is a key factor in limiting damage to important items. Any thermal mass that can be provided within the space will also assist with this.

Option 2

Provide a system with only heating and cooling via a variable refrigerant system, external units would be mounted outside, with internal units within the space, with a ducted fresh air connection and within the archive a dehumidification unit within a room with circulation fans to maintain a degree of humidity control will be provided. The VRV units are normally located within a ceiling space, if this is not possible the units could be mounted above a floating panel to visually hide the units, although close attention would be required to the room acoustics. We believe this option would provide reasonable control, but would likely fall outside of the 20°C +/-2°, 55% RH +/-5 requirements. Although the conditions provided will be more controlled than the current situation in the existing gallery.

3 ELECTRICAL SERVICES

3.1 Electrical Infrastructure

The proposed Electrical infrastructure will include the works itemised in the following subheadings

3.1.1 Gallery – Main Power Supply & New Main Switchboard (MSB2)

An estimation of the Galleries power requirement is 150A, 3-phase.

Therefore a new incoming supply, Main Switchboard and building earthing system will be required we will need to determine whether there is a local sub-station / supply to meet this requirement.

The new MSB is to be located in the ground floor Workshop area. The new switchboard is to be based on a MCB system. The MSB will be a combined type board and will provide power and lighting to all Gallery areas for the ground floor.

The new Gallery MSB must have 1400mm clear space in-front at all times.

Distribution Boards

Distribution boards:

- MCC1 - New Mechanical Control Centre located in first floor area.

3.2 Small Power Supplies

Gallery

A combination of wall, floor and ceiling outlets shall be provided to suit the shape and intended use of the space. Flexibility will be to facilitate the display of various exhibition types. Ceiling mounted outlet positions shall be determined in the next stage.

We feel discussion with the Gallery and their vision for possible future exhibitions is key in achieving this

3.3 Lighting

General Lighting Levels

The design lighting levels to be in accordance with the relevant AS/NZS standards for Interior lighting.

The design maintained lighting levels are to be:
 Offices 350 Lux**
 Toilets/Changing 100 Lux**
 Storeroom 40 Lux**

Note the above figures are suggested and in some cases lower than those outlined in the brief.

All spaces indicated above as ** are to use fluorescent luminaires with T5 high efficiency triphosphor colour 4000k lamps. All control gear is to be high frequency electronic ballasts.

LED lighting technology will be used where possible. LED fixtures are more affordable and are now equivalent in cost to most compact fluorescent downlights.

Gallery Exhibition Lighting Design

The lighting scheme within the Gallery display/exhibition areas will be based on a track based system for flexibility, allowing interchangeable light fittings to suit the particular exhibit. (these could be procured by the client directly rather than through the contractor, to make cost savings).

Lighting within the storage will be surface mounted, and arranged in zones with respect to circulation and storage areas, pull cords will be provided to area of storage with a master off switch located at entry / exit to the archive.

Selected lighting fixtures within the track will need to be dimmed. This can be achieved by dimming the track system as a whole or by manually dimming individual fittings. Dimming individual track light fittings (at exhibition set up times) has proved popular in previous projects for the flexibility of art work displayed in singular spaces. This method also provides some security for over exposure of lux levels to individual art works (see illuminance and nature of light below).

The design of other Exhibition Area and the lighting will depend on the primary use, but we recommend the following factors are considered:

Illuminance:

- 200 lux generally (e.g. oil paintings, ivory) & 50 lux for objects specially sensitive to light (e.g. watercolours, textiles, prints & drawings).
- The Field Collection Areas will have background light levels of 25 lux due to their particular importance .
- No direct sunlight.
- Objects insensitive to light (e.g. metal, stone, glass, ceramics) may be illuminated at higher levels.

UV radiation:

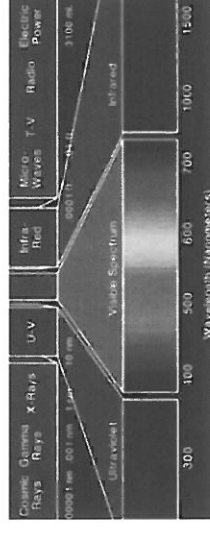
- Provide filters to both natural & artificial lighting to reduce UV radiation (300–400nm) to less than 75µW/lumen of visible radiation.

As well as the quantity of light, we must also consider the quality of the light and the public's enjoyment of both the displayed objects & the space.

Nature of Daylight:

Both visible and UV radiation can damage objects, although as a general rule, more damage will be caused by the UV component than the visible part, it is still necessary to control exposure to visible light.

Light damage is cumulative, so it is the total exposure which matters. Exposure is a product of both luminance and time. 200 lux for 10 hours gives an exposure of 2000 lux-hours, as does 100 lux for 20 hours.



Light Spectrum

The control of UV radiation within daylight is relatively easy using filters. Laminated glass with a special plastic interlayer is a common and neat way of doing this.

White paint, which contains titanium dioxide, is a fairly good UV absorber, and reflecting all light entering a room at least once from a white painted surface can provide sufficient control.

The control of the visible spectrum within daylight to pre-set levels is a more difficult and expensive business. For 50 lux, artificial light rather than daylight should be used exclusively

Exterior Lighting

None is assumed around the building with the exception of the loading dock area, which as a minimum should have lighting on PIR control.

Lighting control

Manual on/off light switches are to be provided for toilet spaces.

Emergency Lighting

The building will be provided with an emergency lighting system and is to be designed to provide the required illumination of 1 lux at floor level in accordance with the NZBC Document F6: 'Lighting for Emergency'.

Emergency exit signs are to be fitted to each egress door.

The emergency lights and exit signs are to be self contained battery type with a manual test facility at the switchboard.

3.4 Communications and Computer Services

Data and telephone services are to be provided by the client?

Suitable internal building conduits and trunking will be provided to facilitate the installation.

Data outlets will be provided for client nominated positions of ceiling mounted wireless access devices within the areas required. Six positions should be allowed for within each building initially until locations are determined.

3.5 Access Control & CCTV

Allow a provisional sum of \$20K for access control, no provision for CCTV

3.6 Security System

An intruder alarm system is proposed for the both buildings

The main features are to be

- Intruder alarm panel with communication connection to a monitoring company
- Activation/deactivation keypad at building entry point
- Movement sensors for each room
- Perimeter door position monitoring with reed switches on each leaf
- Data projector tamper alarm
- Alarm sounder
- Chexit Device for upstairs gallery exit door.

3.7 Sound System

Not required

4 HYDRAULIC SERVICES – TO BE UNDERTAKEN BY QUAY 11 LTD

4.1 Incoming Water Services

A new water supply will need to be provided to the building.

4.2 Hot & Cold Water Supplies

Water services will be designed according to Compliance Document for the New Zealand Building Code – Clause G12 and AS3500:1 and 4.

To reduce water consumption, the following is proposed:

- Water-efficient tap ware at sinks and wash hand basins with a water-rating not less than 4 stars (WELS)
- Toilets with dual flush cisterns

Gallery

Local electric hot water heaters shall provide mains pressure hot water to the toilets and kitchen.

Pipework routes within the gallery shall avoid exhibition areas where possible. Where this cannot be avoided, any pipe routes above or near the Field Collection shall run pipe in pipe in so that any leaks will not occur in these spaces.

4.3 Drainage

Drainage will be designed according to Compliance Document for the New Zealand Building Code – Clause G13 and AS3500.

To reduce the PVC content, it is recommended to use PP/PE for all drainage pipework.

New sanitary drainage will be routed into the existing waste systems, although this will depend on their condition. We suggested a CCTV survey is carried out to determine the condition of the existing drains.

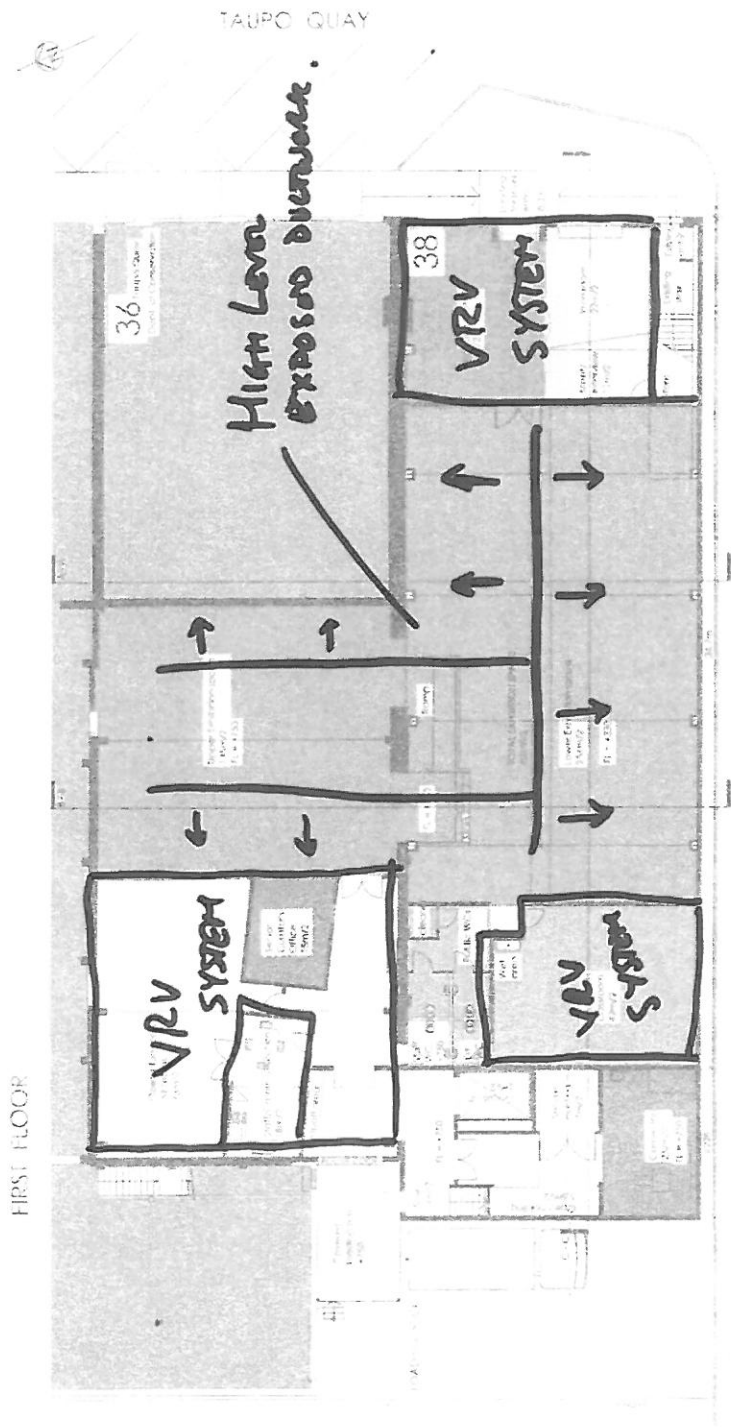
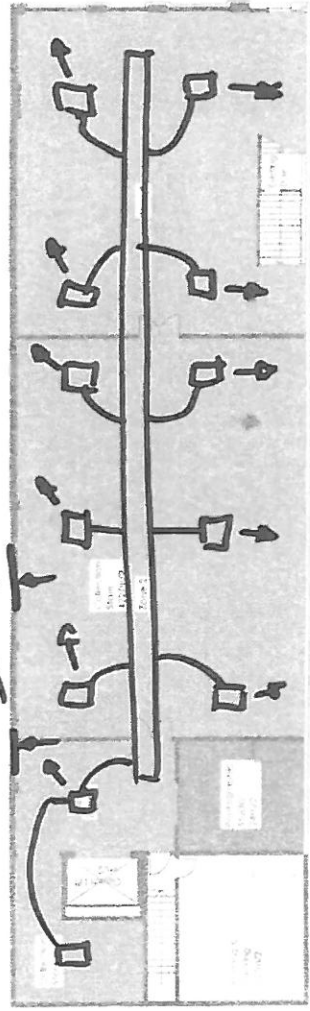
5 APPENDIX A - MECHANICAL & HYDRAULIC EQUIPMENTS SCHEDULE

GALLERY Option 1					
Item	Example Specification	Description	Approx Dimensions LxWxH (m)	Duty	
AIR HANDLING UNIT's 2 Off Store and Galleries	Energy Products Aqualtherm Clever MC190	AHU comprising: - LTHW Heating coil - CHW cooling coil - desiccant wheel - Panel & bag filters - Carbon filter - humidifier lance	6000x2000x1655 (weight 2500kg)	4500 l/s	
CHILLER	Air cooled packaged chiller	Complete with: - integral pump - integral buffer & expansion - low noise & energy type	2000x6000x1500 (weight 500kg)	100 kW	
ATTENUATORS	Vent tech rectangular splitters		1500x1200x1200		
GAS BOILER	Wall mounted gas boiler	Gas boiler with associated pipework and control serving AHU's		2 x 50kW	
HUMIDIFIER	Ultrasonic Humidifier				
AIR-CONDITIONING SYSTEMS	Mitsubishi Electric	Serving receptionist, office areas, meeting rooms. External unit located on roof Provides cooling or heating			
EXTRACT FAN	Roof mounted	WC Extract		150 l/s	
EXTRACT FAN	In-line + attenuator	Kitchen Extract		50 l/s	
EXTRACT FAN	Workshop	Prep Extract		100 l/s	
HW CYLINDER x2	Rheem, mains pressure electric underbench			45 litre	

GALLERY Option 2

Item	Example Specification	Description	Approx Dimensions LxWxH (m)	Duty
Dehumidification Unit	Munters ML1350	Desiccant dehumidification unit	800x600x1600 200kg	
AIR-CONDITIONING SYSTEMS	Mitsubishi Electric VRV PUHY-F800 (external) PEFY-P (Internal)	Cover all Gallery and Store areas	External Units 1300 x 800 x 1800	2 X 90kW
EXTRACT FAN	Roof mounted	WC Extract		150 l/s
EXTRACT FAN	In-line + attenuator	Kitchen Extract		50 l/s
EXTRACT FAN	Workshop	Prep Extract		100 l/s
HW CYLINDER x2	Rheem, mains pressure electric underbench			45 litre
Wall mounted thermostatic Electric heaters		Office, Meeting and reception areas		

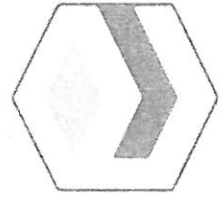
AMU1 ← ROOF MOUNTED EQUIPMENT.
 AMU2 ← EXTEND GALLERY.



GROUND FLOOR

TABLE OF AREAS - OPTION TWO

Category	Area (sqm)	Volume (m³)
Office	100	420
Meeting	15	60
Reception	10	40
Storage	20	80
Public	100	400
Escalators	10	40
Plant	10	40
Roof	10	40
Other	10	40
Total	285	1160



OPTION 1

SK 1



5 ACOUSTICS REPORT

Project:	Serjeant Gallery Relocation	Document No.:	Mm001
To:	DLA Architects Ltd	Date:	19 September 2012
Attention:	Elinor McDouall	Job No.:	2012tbcN
Email/Delivery:		From:	Damian Ellerton
CC:			
SUBJECT	Serjeant Gallery relocation – notes on acoustic issues		

Marshall Day Acoustics (MDA) has been retained to provide comment on potential acoustic issues regarding the proposed temporary relocation of the Serjeant Gallery collection to 36 & 38 Taupo Quay.

The proposal includes 2 exhibition spaces as well as an education classroom, open plan office, meeting/workroom spaces and reception/retail area.

There are three main areas to consider:

1. Sound insulation- Firstly in terms of rain noise to galleries and secondly between spaces.
2. Room acoustics – controlling the reverberation time to ensure the space(s) are neither “dead” or too echoey.
3. Mechanical services noise – from operation of equipment to control the temperature and humidity of the spaces.

SOUND INSULATION

The existing and proposed roof over the upper exhibition space is likely to be inadequate to control potential rain noise during heavy downpours. We understand there is unlikely to be any ability to change this and therefore we will put this issue to one side.

We do not anticipate potential rain noise anywhere else because of the two storey nature of the building, with the second floor being storage area only.

We recommend the following:

- Double stud wall with a single lining to each side and mineral fibre insulation to the cavity between the upper exhibition space and the open plan space/senior curators office.
- Single stud wall between the education classroom and lower exhibition space. This wall cavity shall be filled with mineral fibre insulation. We have assumed school class groups will use this facility between 9.30am and 2pm Monday-Friday and while some noise may be audible it shouldn't detract from the user experience of others.
- The door to the education classroom should be re-organised to allow for a 2 door lobby type arrangement in order to minimise sound leakage to the exhibition areas.
- The meeting/interview room is not used when privacy is required i.e. staff disciplinary matters. In order to increase the privacy of this space would be expensive and difficult given its location immediately next to 2 public areas and a workroom which may or may not have permanent staff present.

- We have assumed the carpentry/back of house area noise will be managed on a case by case basis. For instance if particularly noise activity is required to be undertaken this will not coincide with a school group visit.

REVERBERATION

We recommend the following:

- Upper exhibition space – 70m² Asona Triton 50 on E200 (50mm panel in a grid with 150mm airgap).
- Lower exhibition space – 50m² Asona Triton 50 as a direct fix product to the ceiling.

The ceiling treatment should generally speaking be installed evenly throughout the ceiling areas. In the case of the upper exhibition area this may simply be a centred square/rectangle arrangement. For the lower exhibition space this could take the form of several strips of Triton 50 arranged for even coverage of the ceiling.

For Asona Triton contact Greg Tate 021 675 727 who has advised that for budgeting purposes to allow \$70/m² supplied and installed including the grid. There will be other similar products available, however in order to complete our brief of an extremely quick response we have only provided the one example of an acceptable product.

MECHANICAL SERVICES

We recommend:

- Noise from mechanical services shall not exceed PNC38-43 under typical operating conditions. This equates to approximately 43-48dBA.
- The noise from mechanical services shall be free from tones or whines, and the exit velocity from any diffuser must be less than 5m/s.
- Noise from external items of mechanical services shall comply with the relevant District Plan noise limits applicable for the site. A suitably qualified and experienced acoustic consultant shall be engaged to confirm the proposed external equipment will comply with the requirements of the District Plan.

6 PROPOSED PROGRAMME

In order to present a relatively “fast track” programme to achieve as early a completion date for the project as realistically possible we propose the following:

- Preliminary design and estimate of cost – 28 September
- Infrastructure committee Meeting – 2 October
- Full Council Meeting – 23 October
- Developed Design and review of cost estimate based on measured drawings of the existing building – 16 November
- Application for Resource Consent – 30 November
- Detailed Documentation for construction and pricing – 19 January
- Final Pricing, Building Consent/Resource Consent/Archaeological Consent – end February
- Commence construction – begin April 2013
- Construction complete – end September
- Fitout completion (concurrently with the above) – end October 2013

The above programme assumes that DLA Architects would do all the design work / Resource Consent application for the Fitout and Building Work and that DML Builders would do all the construction including the Council Fitout.

7 ARCHITECTS DRAWINGS
