S P E C I F I C A T I O N

FOR TENDER – NOT FOR CONSTRUCTION

NAEIC

29/09/2017

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SPECIFICATION

Fabrication standards:

Where fabrication of an element involves the work of two or more contractors, the contractors shall work in close consultation to achieve the desired outcome. If in doubt – ask!

Shop drawings to be provided to designers prior to fabrication.

Work to be fabricated in accordance with all relevant AS/NZS and BCA regulations and best practice standards.

The contractor shall not commence any work (including ordering materials) prior to undertaking a full site measure. All dimensions are to be checked on site. Any resultant modifications to be approved by Thylacine. All dimensions are in mm unless otherwise stated.

All timber structural framing shown is indicative only. Timber framing must comply with AS1684. Ensure all structural bracing is fully adequate for support people climbing on structures. Timber framing to be inspected and approved by a Structural Engineer.

90 x 45 MPG10 as a minimum standard.

All propriety products are to be installed in accordance with manufactures specifications.

Dimensions of joinery housing monitors and mounts for monitors are not final until the AV hardware supplier provides the exact dimensions of the 55” monitors. Close consultation between hardware supplier and fabricators is required to achieve desired outcome.

Notes on drawings:

NT1 All joinery carcasses to be constructed of E0 MDF or ZMDF (utilizing polyurea based wood adhesives). Seal all machined edges. Joinery is typically constructed of 16mm and 9mm board (9mm or 7mm bendy board to curves) refer, however, to drawings.

All curves in freestanding joinery and in graphic ribbon to be shaped by cnc cut frame to carcass. Thylacine will provide a dwg plan to use as base for cnc cutting file to ensure curves are built as designed.

NT2 ~~Hoop Pine plywood (utilising phenol formaldehyde adhesive). This is to be structural grade where loadbearing. All vertical dress panels to be structural grade plywood. This requirement supersedes any and all drawing notation.~~

NT3 All system showcases 10.38 mm low iron laminated glass or E0 18 mm sealed MR ZMDF panels with 130 mm H extrusions bonded top & bottom. All joints to be mitred (where fixed glass) achieving a frameless look. Fine polished edges.

NT4 Showcase furniture colour Dulux Raku PG2C7/ PN2E8

NT5 Two high security locks to be fitted to each showcase.

NT6 All hinges to be concealed and supported by hinge bolts. Hinge pins must not be susceptible to being driven out. Emissions free silicone compression seals all round.

NT7 All paint to be water based emulsion paint with acrylic binders. Apply one priming coat plus two top coats.

Allow 1 weeks off-gassing period where the internal surfaces of showcases are painted and cases are going to be closed.

Allow 4 days off-gassing period where painting is carried out in open display areas and objects are placed in close proximity.

Where a graphic is to be applied to a substrate, seek advice from the graphic producer to ensure paint specification is appropriate.

NT8 Metalwork, where noted on drawings, to be 2 pack painted Dulux, (satin)

Dulux Raku PG2C7/ PN2E8

NT9 Metalwork, where noted on drawings, to be powdercoat, Dulux Raku PG2C7/ PN2E8

NT10 Solid Maari timber top to joinery units and bench seating. Made from 150mm x 38mm lengths.

Vernites Aquapur Pack 2K (AP) Coating System 15% gloss

Supplier Worldwide Timber traders

Grain direction as marked on drawings.

Top shapes to be cnc cut to ensure accuracy to design. Rebates for Audio station acrylic graphics and Audio station lightboxes to be cnc routered. CNC dwg supplied by designer.

NT11 Timber for batten screen Jarrah - pre-aged grey sawn/ 'wire brushed'. Ensure no splinters. Allow for variation in section to 5mm - do not rip. Aged surface required.

Finish: Allow for Vernites Aquapur Pack 2K (AP) Coating System 15% gloss. Allow for testing laternative finishes

Supplier World Wild Timber traders. Supplier Worldwide Timber traders.

Names laser etched/ laser engraved into face. Graphic file provided by designers. Allow for 100 names (Each with Given and Surname). Allow for prototype and liaison with designers to determine depth of cut and thickness of lettering.

NT12 Batten spacers threaded with 19mm anodised aluminium tube. 6 colours TBA

NT13 Marri timber veneer on 18mm MDF

Vernites Aquapur Pack 2K (AP) Coating system 15% gloss.

Allow for cut out text and patternation with black edges. Thylacine to provide cnc file.

~~NT14 Base build doors by others.~~

NT 15 Freestanding joinery vertical faces

Timberwork, MDF or PLY (including shadow lines and spacers and any exposed fixings)

to be Dulux, Enviro2, Interior Low Sheen (spray) 2 pack

Colour Dulux Tristan PG2C5

NT16 Graphic Ribbon wall & batten mounted joinery

Timberwork, MDF or PLY (including shadow lines and spacers and any exposed fixings)

to be Dulux, Enviro2, Interior Low Sheen (spray) 2 pack

Colour Dulux Raku PG2C7/ PN2E8

NT17 metalwork for batten screens

Base plate 8mm flat steel plate cnc cut. Thylacine to provide dwg plan including perimeter edge and cut outs for cleats to be used as base for contractors cnc cutting file.

Base plate chemset to slab at intervals determined by structural engineer. Holes for fixings to be incorporated in cnc cutting file

8mm vertical cleats to fit angle of cut rebate in base plate and welded to meet structural standards and regulations as nominated by engineer.

To be powdercoat, Dulux Raku PG2C7/ PN2E8

NT18 All acrylic sheet as noted on drawings (acrylic sheet - Perspex, Plexiglass or equal; polycarbonate sheet – Lexan or equal).

All joints to be mitred and bubble free. The contractor is to price the thickness of acrylic sheet considered to be fit for purpose and highlight any contradictions with the drawings for review with designer.

NT19 TORQ headed security screws to acrylic cases

~~NT20 Walls to be Dulux, Enviro2, Flat (no Teflon based paint to be used on walls)~~

~~Dulux, Dulux Hog Bristle Half (fine nap roller)~~

~~Dulux, Imperator PG 2H9 (fine nap roller)~~

LIGHTING SPEC NOTES Lighting specification to follow as addendum

NT21 LED Lighting in Joinery unit kicks as specified in lighting specification.

NT22 LED Lightpanel in Showcase Type 3 as specified in lighting specification.

NT23 Lighting to Showcase Type 1 and Type 2 as specified in lighting specification.

NT24 Lighting to entry sign as specified in lighting specification.

NT25 LED lights to Interactive lightbox as specified in lighting specification.

Northam Aboriginal and Environmental Interpretive Centre

Multimedia Hardware Supply and Installation

Volume 1 - Technical Description

September 2017

Prepared by Mental Media Pty Ltd
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Scope of Work

Introduction

Northam Aboriginal and Environmental Interpretive Centre is a new build being undertaken by the Shire of Northam in Western Australia. A range of multimedia installations are proposed as part of the Visitor Experiences.

The multimedia supply and installation, as described in these documents, comprises the supply and installation of all multimedia hardware. A comms room is provided with data reticulated from the display spaces to rack mounted patch panels.

The scope of work includes but is not limited to the hardware, systems and services described in the documentation. It is expected that the Multimedia Hardware Contractor will include in their range of supplies all necessary goods, services and materials to deliver the entire system...supplied, installed, tested, commissioned – whether specifically mentioned or not - and including the rectification of all defects during the nominated defects liability period.

The scope will also include the provision of documentation including, but not limited to, all product warranty cards and manuals; as built drawings and schematics; spare parts; computer operating system, utility and application software; a full and detailed list of installed hardware including brand, model, serial number and the name, address and contact details for the local wholesaler/service agent. These materials are to be provided within the defects liability period.

NOTE: At the time of writing the exhibition design has not been finalised with regard to monitor mounting, projector and sound system positioning and other details.

Option B

The Client is seeking additional funding for multimedia in the Centre to augment the base specification. The Technical Description, Technical Specifications and Technical Schematics include information about Option B, some or all of which could be included in the contract should funds become available. If part or all of Option B is taken up the additional goods and services will be commissioned for procurement and installation at the same time as the Base Tender items as part of the contract.

All Option B goods and services are clearly identified in this documentation and will be clearly identified and priced separately from the Base Tender items in your tender response, and in accordance with the RFQ Response requirements on page 4.

Drawings Included

D367_Content amended 170811.pdf
MM5.1 Map Table PRELIMINARY.pdf
1520_NIC_A104_Suspended Slab Plan_4.pdf
150347-E3.1_3.pdf
5626 Schematic.pdf
PQ Labs_PR0E2100_1220mmX1380mm.pdf

Service Level Agreement

The installed systems will be warranted by the supplier for a period of 12 months from Practical Completion in accordance with the defects liability period for the contract. In addition, the successful contractor may be required to enter into a Service Level Agreement (SLA) for the ongoing maintenance of the installed systems. Price and details of the SLA will be provided as a separate section in the itemised quotation. The SLA will commence following the defects liability period. Details of the requirements for the SLA are provided below.

Schedule

The majority of the multimedia hardware installation will occur on completion of the main construction contact, after the 'dust free' date in April 2018. However, some preparatory work may be required such as installation of specialist cables, mount base plates and projector hanging points. The Multimedia Hardware Contractor is expected to liaise with the Project Manager and the main construction contractor at an early stage to ensure all necessary prep work is completed.

Multimedia content will be provided by others and the Multimedia Hardware Contractor will be required to attend during content installation and hardware commissioning. It is anticipated that final programming of the control system will not take place until after the software is installed.

Date	*Works*
May 2018	Dusty Works
April 2018	Dust Free Date
May 2018	Installation (3 weeks)
June 2018	Software install, programming and commissioning (10 days)
June 2018	Handover

RFQ Response

NOTE: the technical specification and technical description represent the scope of the project – the quantities and services required may be revised up or down according to the final budget available for the multimedia scope of works.

The Tenderer will provide the following Schedules as part of their quotation:

1. Itemised Costs.
   The price provided will clearly and unambiguously identify a fixed lump sum price in Australian dollars and including GST for the scope of works included in the Base Tender. It will similarly provide pricing for goods and services included as Option B.

   The tenderer will also include in the response an itemised quotation budget providing...
   a. individual production sub totals with line items for major components,
   b. miscellaneous installation hardware and labour costs by production.
   c. Daily rates for on-site attendance at software installation, commissioning and final programming
   d. Detailed and itemised pricing schedules for the optional Service Level Agreement.

2. Hardware Specifications.
   Any variations from the makes/models as listed will be supported by product specifications, brochures, etc. Alternatives will be equal to or exceed the minimum specification of the nominated equipment and the respondent will provide an explanation of the benefit to be gained from the alternative.
   Substitution of alternatives following the awarding of the contract will only be considered if the original is no longer available and with express written permission.

3. Variations.
   A schedule of rates for variations including labour and disbursements will be included with the tender response. It is anticipated that the scope described here is the maximum scope of works and the rates for variations could also be used to inform a reduction in the scope of works.
   NOTE: We reserve the right to vary the quantities and specifications of the hardware supply and installation contract. Some productions have not been fully resolved in design and the specification may change.

4. Nominated personnel.
   Please provide the name, job description and relevant experience/qualifications of each of your nominated personnel.
   Full CVs are not desired or required.

System Infrastructure

System infrastructure will be provided under separate contracts. The tenderer should take note of the full description provided in the Technical Specification.

AC Power

Power is supplied at the Comms Room and at all multimedia display locations. It may be necessary for the multimedia hardware supplier to undertake minimal additional works and modify the locations of some outlets so an allowance should be made in the cost for an electrician.

Power is provided in the gallery spaces at appropriate locations for the Multimedia installations as described in drawings *160920 Multimedia Overlay.pdf* attached.

20amp single phase power is supplied for each rack in the comms room.

DC Power

DC Power will be provided to low voltage equipment in the racks by power supplies in the ONErack system (see ONErack™ in the Technical Specification).

Distribution

CAT6 UTP cable is provided (by others) to all display locations. In some cases the cable is terminated at boxes/plates and in others the cable will require final termination and testing. It may be necessary for the Multimedia Hardware Supplier to install limited additional CAT6 cabling but none has been identified at this time.

The contractor will be required to supply and install all other connections for the multimedia system in the Control Room and Galleries including but not limited to…

- CAT6 patch leads between the control room RJ45 patch panels in the IT rack and the distribution baluns,
- All connecting cables between the source devices and the extenders.
- Power distribution to all devices
- CAT6 patch leads in the galleries
- All connecting cables between the extenders and display devices in the galleries
- All interactive connections including touch screens, cameras, PIRs contact closures etc.

Line level audio, video and data signal distribution will be via CAT6 and utilising TX/RX extenders of various specifications.

The Contractor will allow for the supply and installation of all cables and devices interconnecting between the control system and the various display devices located in the galleries unless otherwise specified.

All installed cables will be clearly labelled at both ends to indicate the MM number connections at minimum.

Lighting	The supply of all lighting track and fixtures has been specified by a separate contractor and supplied as part of the base building works contract. The lighting will be controlled by the multimedia control system via DMX. There are a couple of instances where the lighting is an integral part of a multimedia production and where the contractor's control system programmer will be required to work cooperatively with the lighting designer and producer. Exhibition lighting, works lights, etc. are controlled by the Dynalite system supplied as part of the BMS. Where required the exhibition lighting can be controlled from the multimedia control system via an RS485 interface with the Dynalite system by calling up presets. The Hardware supply and installation contract includes a small allowance for lighting in MM1.1 Immersive Space, in both options. Quantities indicated in the schematic are indicative and for tendering purposes only. It is anticipated that the quantities/specifications will change according to the producer/lighting designer's final designs.
Audio	No speaker cable has been installed to distribute the audio for the Immersive Space directly from the rack mounted amplifiers in the Comms Room. The Contractor will be required to install speaker cable.
Racks	A single 45RU Professional Standard Heavy Duty 19" Rack with side panels will be provided in the Comms Room. This rack is supplied and installed by the electrical contractor. All CAT6 from the Interpretive Displays will be terminated in RJ45 patch panels in this rack. It is anticipated that the remainder of the space in the rack will be reserved for IT, security and telephony infrastructure to be supplied by others. The Multimedia contractor will be required to provide additional racks and all necessary rack mount hardware for the installation of the equipment supplied as part of this contract including shelves, blank panels and cable management rails. All rack mounted hardware will be provided with rack mount face plates or "ear" kits. Equipment will not be 'stacked' and non-rack mount devices will be mounted in ONErack™ systems. Racks will be convection ventilated with the hottest items located at the bottom of the rack and adequate free ventilation grills at the bottom and top of the racks to provide for the free flow of air through the racks. All cabling will be neatly contained with cable straps/ties on lacing bars in a professional manner and rack mount power strips will be provided to provide sockets for each and every

powered item (no double adaptors). All cables will be clearly labelled at both ends.

The control room is not fitted with an access floor so cable routing between racks will be via overhead suspended cable trays or catenary wires, or via access holes created in the side walls of adjacent racks and fitted with appropriate grommets to protect the cables.

Rack drawings will be prepared by the contractor and submitted to Mental Media for approval prior to installation.

Control System

It is assumed that all equipment supplied and installed by the Contractor will have ethernet or serial ports (RJ45 or RS232) for external control.

It is intended that the multimedia control will be largely conducted via a multimedia dedicated LAN that will have a connection to the web via the corporate LAN supplied by others.

Control of computer source devices will be direct over the multimedia network with dedicated 1 GB switches.

Media players will be controlled via TCP/IP over the LAN.

Projectors and displays will be controlled via the CAT6 Infrastructure either direct, via HDBaseT Ethernet links or via local hubs/switches where there is a cluster of devices.

Miscellaneous serial devices such as LCD monitors are controlled via the CAT6 Infrastructure with a TCP/IP to serial device installed locally to the device where necessary.

Devices without serial or IP control will be switched ON/OFF with IP power relay switches.

The Control System will include but is not limited to...

- Admin computer (rack mount PC)
- Remote VPN and/or TeamViewer
- Gigabit Switches sufficient for the number of connections
- TCP/IP to RS232 interfaces
- DMX playback capability (one universe)
- All cables and devices interconnecting between the control system and the various source devices in the control room.
- Control System Programming
- Graphical User Interface creation
- Supply and installation
- System wide testing and commissioning.

The Contractor will allow for the supply and installation of all cables and devices interconnecting between the control system and the various display devices located in the galleries unless otherwise specified.

The contractor is required to work cooperatively with the producer(s) to facilitate seamless integration of the systems and it is anticipated that extensive liaison will be required early in the project program.

Mounts

Projectors will be suspended from Unistrut fixed to the underside of the ceiling utilising Unistrut adapters and 1.5" pipe fittings to obtain the correct height and position.

All projectors will be finally mounted utilising quick release ceiling mounts with specific interface plates – NOT UNIVERSAL MOUNTS.

Typically the mounts will be Chief RSA mounts. See http://www.chiefmfg.com

All monitor displays will be mounted on slim fixed (not tilting) mounts attached to the VESA mount points in accordance with the manufacturer's recommendations.

Where monitors are mounted behind graphic panels or dress plates the monitor mounts are to be packed and shimmed to sit close behind the panel. All monitors are to be mounted straight and level, centred in their aperture, unless specifically noted.

Where baluns are mounted in proximity to display hardware (monitors, projectors, speakers) they will be mounted with cable ties on galvanized cable tray and fixed to an appropriate surface. All cables will be terminated according to manufacturer's standards and neatly fixed with cable ties.

Interaction

Where monitors or other powered devices do not revert to standby mode when they lose sync or cannot be effectively controlled over CAT5 then TCP/IP controlled power relays will be installed to provide power down after hours. Final numbers of relays to be determined based on the equipment supplied.

MM5.1 Map Table

The map table requires a PQ Labs IR interactive overlay for 2 x 55" monitors. The exhibition designer is designing a table

with a glass overlay (se preliminary designs attached). The contractor will be required to provide the 2 x 55" monitors, monitor mounts, mounting rails, interactive computer, ventilation fans and the PQ Labs IR overlay that attaches to the top of the glass.

It should be recognised that ventilation fans for this installation are very important and up to eight 80/100mm muffin fans will be required to be installed to provide adequate ventilation for the installed displays

Other Works

The Multimedia Hardware Contractor will allow time and appropriate costs for liaison with others to integrate the works including the builder, electrical trades, and the exhibition builder.

Time will also be allowed for liaison with multimedia producers Project Manager, lighting contractor, tertiary works contractor and the client.

Access

All computers will have TeamViewer (www.teamviewer.com) installed and registered to Mental Media's account. Mental Media, the content producers and the contractor will have access to the computers via the networked connection.

Production Specification

MM1.1 Immersive Space

Display	6000 ANSI WXGA LED/Laser Projector c/w ultra-short throw lens.
Audio	Broadcast multi-channel audio with multiple speakers + sub.
Source	Media Player.
TX/RX	Video and LAN via HDBaseT Audio via 12awg speaker cable
Integration	This is a theatrical Welcome to Country and introduction. As visitors enter the space, they see rippling water on the floor, and surrounding them some tall "trees". This is a highly theatrical space so close coordination with the Exhibition Designer, Lighting Designer and System Programmer is required. A single projector is suspended from the roofing trusses above and speakers mounted on threaded rod droppers to set them at the right height. The lighting is controlled directly from the control system and
Function	Looping linear video and audio with synchronised lighting.

Option B

Display	3 x 6000 ANSI WXGA LED/Laser Projectors c/w ultra-short throw lens plus lighting effects.
Audio	Broadcast multi-channel audio with multiple speakers + sub.
Source	Watchout Media Server.
TX/RX	Video and LAN via HDBaseT Audio via 12awg speaker cable DMX over CAT6
Integration	This is a theatrical Welcome to Country and introduction. As visitors enter the space, they see rippling lighting effects and surrounding them some tall "trees". This is a highly theatrical space so close coordination with the Exhibition Designer and Lighting Designer is required. Three projectors are suspended from the roofing trusses above and speakers mounted on threaded rod droppers to set them at the right height.
NOTE:	Watchout programming is to be included in the services supply for this production.
NOTE:	Option B includes additional lighting effects so additional time should be allowed for installation and commissioning, lighting programming and control system programming.
Function	Looping linear video, audio and lighting effects.

MM2.1/2/3 Seasons Monitors

Display	55" Monitor.
Audio	Broadcast mono audio with small active speaker.
Source	Media Player.
TX/RX	Video and LAN via HDBaseT Audio via Audio Extender
Integration	Three separate installations with each having a small broadcast audio speaker mounted close by. Final mount type and speaker location to be determined in consultation with the exhibition designer and exhibition builder.
Function	Looping linear video and audio.

Option B

Display	3 x 55" Multitouch displays.
Audio	Directional speaker bar.
Source	Interactive media players for HTML5.
TX/RX	Video and LAN via HDBaseT Audio from display
Integration	Three separate installations with each having a Directional sound bar mounted above or below. Final mount type and speaker location to be determined in consultation with the exhibition designer and exhibition builder.
Function	Interactive multimedia.

MM3.1/2 Sorry Monitors

Display	2 x 27" Multitouch displays.
Audio	Directional speaker bar.
Source	Interactive media players for HTML5.
TX/RX	Video and LAN via HDBaseT Audio via Audio Extender
Integration	Two separate installations with each having a Directional sound bar mounted above or below. Final mount type and speaker location to be determined in consultation with the exhibition designer and exhibition builder.
Function	Interactive multimedia.

MM4.1/2/3 Yarning Circle

Display	3 x 55" Monitor.
Audio	Broadcast mono audio with small active speaker.
Source	Media Player.
TX/RX	Video and LAN via HDBaseT Audio via Audio Extender
Integration	Three separate installations but working in sync with each other. Monitors are mounted with ceiling mounts in portrait orientation and each monitor has a small broadcast audio speaker mounted on the dropper bar above the display. Final speaker location to be determined in consultation with the exhibition designer and exhibition builder. HDBaseT and audio extenders to be mounted at ceiling height.
Function	Looping and synchronised linear video and audio.

MM5.1 Map Table

Display	2 x 55" Narrow Bezel Monitors.
Audio	Directional speaker bar.
Source	Interactive Computer
Touch	The two displays will be overlaid with a sheet of safety glass and IR interactive device from PQ Labs in the Unites States http://www.pqlabs.com/support_wall.html > Touch Wall Interactive Design Tool A preliminary plan and installation guide is attached (PQ Labs_PR0E2100_1220mmX1380mm.pdf).
TX/RX	LAN only
Integration	Two monitors laid horizontal and integrated into the touch table furniture unit. (see Map Table.pdf drawings). The monitors are overlaid with glass and the IR touch overlay attached with double sided tape to the top surface of the glass. NOTE: The Table needs to be fitted with a minimum 8 x 100mm muffin fans to provide adequate cooling to the two monitors to ensure longevity.
Function	Multitouch Interactive.

Service Level Agreement

The Northam Shire requires an agreement for the supply of the service and maintenance requirements for the installed multimedia hardware at the Northam Aboriginal and Environmental Interpretive Centre (NAEIC).

All installed equipment will be warranted for a defects liability period of 12 months from date of handover. In addition, an SLA is required for a further three years from the completion of the defects liability period and include regular service of the installed systems plus the removal, packing, shipping and reinstallation of any faulty equipment returned under manufacturer's warranty as part of this agreement.

There is a range of basic expectations for the SLA to be implemented outlined in the scope.

Spares

The following spare equipment will be provided as part of the hardware supply contract. These items will be stored at the NAEIC.

1 x 55" Narrow Bezel Display
HDBaseT extender (TX/RX)

The equipment will be identical to the installed equipment of the same specification.

SLA Basic Scope

Preventative Maintenance

The installed equipment will be periodically cleaned, adjusted and tested in accordance with the manufacturer's specifications.

Where the manufacturer doesn't provide a maintenance specification then the equipment will be cleaned, adjusted and tested every 6 months.

The Service Provider will include all preventative maintenance labour and

Incidental consumables in the price for the scope of works.

Defect Correction

The Service Provider will respond to reported faults at the NAEIC in a timely manner as indicated in the "Response times and working hours" schedule below.

The Service Provider shall provide a single qualified technician in the first instance to determine the action required. If two technicians are required to provide a safe working environment (either high access or heavy equipment) then a second technician will be despatched without delay.

Where equipment is required to be removed from the NAEIC for service at the Service Provider's workshop or to be returned to the manufacturer the Service Provider will replace the failed equipment with one of the NAEIC's spares or endeavour to source replacement equipment to keep the exhibition running.

All replacement parts will conform to the manufacturer's specification.

The Service Provider will include up to 20 hours for on-site defect correction call out labour in the scope of works. An hourly rate will also be provided for call outs above and beyond the 20 hours included.

Response times and working hours

It is anticipated that the NAEIC will be open from 0900hrs to 1700hrs daily. Maintenance tasks will generally need to be undertaken during opening hours. It is expected that procedures will be developed with the client to accommodate maintenance while there are visitors in the NAEIC.

Generally the response will be within 24 hours of notification of a fault.

The following working hours and response times apply to this service agreement.

- Preventative maintenance - Wherever possible all preventative maintenance tasks will be undertaken outside the opening hours of the Exhibition on days, and at times, mutually agreed by the NAEIC's representative and the Service Provider.

- Defect correction - The Service Provider will make technician(s) available 7 days per week. Call outs must be requested by the NAEIC's nominated representative.

  Call out response times are…

  1. Where the call is made in response to a start-up fault before 0900 then the response will be an immediate priority response.

  2. Where the call is made in response to a fault that impedes the NAEIC's performance for a VIP visit then the response will be an immediate priority response.

  3. Where the call is made in response to a fault that doesn't fall into either 1. or 2. above, and before 1400hrs, then the Service Provider

will respond at 0900hrs the following day, or at a mutually agreeable time.

4. Where the call is made in response to a fault that doesn't fall into either 1. or 2. above, and after 1400hrs, then the Service Provider will respond the following day, or at a mutually agreeable time after the Exhibition has opened.

Incidental consumables

Consumables such as batteries, filters, fuses, cleaning solutions and cloths, and all tools necessary for carrying out the service are to be included in the agreement.

Chargeable consumables

Projector and lighting instrument lamps, hazer fluid (except the lamps and hazer fluid provided as spares in this contract), motors, relays, fans, colour filters and parts required for bench service of the nominated equipment are not included but will be quoted and charged following approval from the NAEIC representative.

SLA Reporting and Record Keeping

A log book in the form of a "day to a page" diary will be kept on the control system computer to maintain a complete record of events that relate to the multimedia installation.

Reporting

The following reports will be submitted to the client...

Preventative Maintenance Report
Each time preventative maintenance is undertaken a report will be submitted detailing the works undertaken, equipment status and recommendations for corrective maintenance or replacement where required.

Defect Correction
Where the Service Provider is called out to correct a defect a report will be submitted within 24hrs detailing the time of call out, duration on site, works undertaken, equipment status and additional works required. If additional works are required and/or the fault could not be immediately repaired the Service Provider will provide details of the course of action and expected timeframe.

Record keeping

The following records will be kept in the log book...

- Call out response (Service Provider)
  Time of arrival, action taken and time of departure to be recorded. If additional actions are required these should also be noted.
- Preventative Maintenance (Service Provider)
  Time of arrival, action taken and time of departure to be recorded. If additional actions are required these should also be noted.

Exclusions

Although it is expected that the Service Provider will make all effort to correct any faults arising in the exhibition as quickly as possible to facilitate the smooth running of the exhibition, the following items and events are excluded from this scope of works.

Items damaged by misuse and/or abuse, equipment damaged by accident, disaster, fire, flood, water, wind, lightning or act of God.

Items that can be shown to have failed due to power fluctuations are also excluded from this scope.

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Northam Aboriginal and Environmental Interpretive Centre

Multimedia Hardware

Volume 2 - Technical Specification v1

September 2017

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This document is the second of two volumes describing the works required for completion of the Multimedia Hardware supply and installation at the Northam Interpretive Centre.

Preface

The main types of specifications that define the materials and equipment in this document include...

Performance	A result is required and the contractor may choose/propose materials and equipment that provide the desired result.
Proprietary	Specific Brand names and models to be used.
Descriptive	The focus is on exact appropriate specifications and installation methods
Reference	The requirements are based on appropriate standards.

Where hardware items described in Volume 1 - Technical Description are not accompanied by a specification in Volume 2 – Technical Specification then the contractor will provide a provisional sum and a description outlining how the sum was determined.

DISPLAY DEVICES

Projector (16:10 Aspect Ratio)

Description

A 6500 ANSI lumens, WXGA, single chip DLP projector specifically designed for 24/7 operation in demanding situations.

The projector will typically be low noise, high brightness, small form factor with a reputation for installation in museum installations.

The projector will be 'lampless' employing LED/Laser technology for low maintenance.

The projector will meet the following minimum specifications...

- Designed for 24/7 operations
- Long Lamp life
- Interchangeable lenses
- Mechanical lens shift
- Sealed optical architecture
- Minimum 3 year warranty with ability to extend

Minimum Specification

Technology:	Single chip DLP
Light Source	LED/Laser
Resolution:	HD (1280 x 800)
Aspect Ratio:	16:10
Brightness:	Minimum 6000 ANSI lumen
Contrast:	Minimum 10,000:1
Inputs:	HDBaseT VGA analog RGB (15 pin HDDSUB) HDMI DVI-D
Control:	TCP/IP

Typically

Panasonic PT-RZ630BE or a similar product equivalent in function, quality, etc. to the approval of the Superintendent.

NOTE:

The projector will be fitted with an Ultra-Short Throw lens not greater than 0.40:1 throw ratio. (Typically Panasonic ET-DLE030).

Monitors

55” Monitor

Description

A 55” LCD 16:9 aspect ratio commercial grade display monitor with HDMI/DVI/Display Port in and minimum capability of 1920 x 1080 resolution.

The monitor will be capable of vertical or horizontal orientation and have standard VESA mounting attachments.

It will have external control ports in RJ45 format with readily accessible serial control protocols for power cycling and input selection.

Minimum Specification

Screen Size (Diagonal):	55"
Screen Aspect Ratio:	16:9
Native Resolution:	1920 x 1080
Viewing Angle:	$178^0/178^0$
Brightness:	350 cd/m2 (typical)
Contrast Ratio:	5000:1
Input/Output Terminals:	D-SUB, HDMI, DVI/Stereo Mini Jack, IR sensor
External Control:	TCP/IP

Typically

Samsung DC55E or a similar product equivalent in function, quality, etc. to the approval of the Superintendent.

55” Monitor – Narrow Bezel

Description A narrow bezel 55” LCD 16:9 aspect ratio commercial grade display monitor with HDMI/DVI/Display Port in and minimum capability of 1920 x 1080 resolution.

The monitor will be capable of vertical or horizontal orientation and have standard VESA mounting attachments.

It will have external control ports in RJ45 format with readily accessible serial control protocols for power cycling and input selection.

Minimum Specification

Screen Size (Diagonal):	55"
Screen Aspect Ratio:	16:9
Native Resolution:	1920 x 1080
Viewing Angle:	$178^0/178^0$
Brightness:	350 cd/m2 (typical)
Contrast Ratio:	5000:1
Max Bezel to Bezel:	5mm
Input/Output Terminals:	D-SUB, HDMI, DVI/Stereo Mini Jack, IR sensor
External Control:	TCP/IP

Typically Samsung UD55EB or a similar product equivalent in function, quality, etc. to the approval of the Superintendent.

55” Multitouch Display

Description

The 55-inch Multi-Touch Display will provide multitouch performance, bright high-definition graphics, wide viewing angles and a fully-integrated, easy-to-use, plug-and play device.

The device should provide a surface treatment that allows a user’s fingers to effortlessly glide across the screen. The touch should be Projected Capacitive (3M PCT) technology that meets the typical touch performance of popular smart phone and tablet devices by offering a high performance multi-touch experience and recognise up to 40 simultaneous touches with a 10-millisecond response time (or better).

The display will also recognise and reject the user’s palms or arm resting on the screen to help prevent inadvertent touches.

Minimum Specification

Screen Size (Diagonal):	55"
Screen Aspect Ratio:	16:9
Native Resolution:	1920 x 1080
Viewing Angle:	$178^0/178^0$
Brightness:	610 cd/m2 (typical)
Contrast Ratio:	4000:1
Input/Output Terminals:	HDMI, VGA, Display Port
VESA Pattern	400 x 400
Touch Inputs:	60 with palm rejection
Touch communication:	USB

Typically 3M C5567PW

27” Multitouch Display

Description

The 27-inch Multi-Touch Display will provide multitouch performance, bright high-definition graphics, wide viewing angles and a fully-integrated, easy-to-use, plug-and play device.

The device should provide a surface treatment that allows a user’s fingers to effortlessly glide across the screen. The touch should be Projected Capacitive (3M PCT) technology that meets the typical touch performance of popular smart phone and tablet devices by offering a high performance multi-touch experience and recognise up to 40 simultaneous touches with a 10 millisecond response time (or better).

The display will also recognise and reject the user’s palms or arm resting on the screen to help prevent inadvertent touches.

Minimum Specification

Screen Size (Diagonal):	27"
Screen Aspect Ratio:	16:9
Native Resolution:	1920 x 1080
Viewing Angle:	$178^0/178^0$
Brightness:	250 cd/m2 (typical)
Contrast Ratio:	3000:1
Input/Output Terminals:	HDMI, VGA, Display Port
VESA Pattern	100 x 100
Touch Inputs:	40 with palm rejection
Touch communication:	USB

Typically 3M M2767PW

Projector Mount

Description	All projectors will be mounted utilising high quality projector mounts that maintains registration when disconnected and reconnected for servicing. The mount will provide independent roll, pitch and yaw adjustments. All mounts to be matched to same brand/manufacturer mounting plates, adaptors, brackets, etc.
Typically	Chief VCM Series projector mount (VCM76P) or Visual Fidelity custom projector ceiling mount.

Monitor Mount - Wall

NOTE	Monitor mounting will be determined in consultation with the exhibition secondary works furniture manufacture contractor. The monitor mounts could be either 'split batten', fixed wall display mounts with double rails, or slide on 'plate' style mounts.
Description	A flush mount for LCD display panels that is suitable for monitors with any standard VESA mounting patterns up to 400 x 600 mm. Powder coated steel with a slide on assembly style or double rail with lateral shift capability. Provides an ultra-low-profile mounting solution.
Typically	Chief RLF2 Large Fixed Wall Display Mount or Sanus VML5

Monitor Mount - Ceiling

Description	A flush mount for LCD display panels that is suitable for monitors in landscape or portrait orientation and with any standard VESA mounting patterns up to 400 x 600 mm. Elegant powder coated steel finish with low profile as the mounts will be visitor accessible. The mount will be provided with compatible, highly finished, dropper bar and ceiling fixture.
Typically	Chief MCM1U FUSION™ Medium Flat Panel Ceiling Mount

SOURCE DEVICES

Video/HTML5

Description The video player of choice will be a solid state HD media player capable of accepting a wide range of media types and providing easy to use intuitive software for upload and formatting of the media...

Minimum Specification

Output	HDMI and stereo analog audio
Display Resolution	1920 x 1080/1600 x 1200@60p
Media Supported	MPG 1/ MPG2 HD/ MPG4/ WMV
	MP3/Wave
	JPEG/GIF/BMP
	HTML5
Interface	Web based interface
Control	TCP/IP

The selected player must have a history of continual operations in a museum type environment or be specifically designed for museum applications.

Typically Brightsign HD223

Interactive Media Player

Description The interactive media player of choice will be a solid-state HD media player capable of accepting a wide range of media types and providing easy to use intuitive software for upload and formatting of the media...

Minimum Specification

Output	HDMI and stereo analog audio
Display Resolution	1920 x 1080/1600 x 1200@60p
Interactive interface	USB High speed host port
	GPIO
	RS232
Media Supported	MPG SD/ MPG2 HD/ MPG4/ WMV
	MP3/Wave
	JPEG/GIF/BMP
	HTML5
Interface	Web based interface
Control	TCP/IP

The selected player must have a history of continual operations in a museum type environment or be specifically designed for museum applications.

Typically Brightsign HD1023

Watchout Computer

Description

The computer will be suitable for interactive operations with the MultiTouch Table touch screen application and utilising the monitors and touch screen interfaces described elsewhere in this document. The computer must be fully compliant with the specification as set out by the MultiTouch module supplier, configured specifically for operations with the module and with all necessary system and application software installed.

It will be fully rack mountable with through ventilation from the front to the back.

Minimum Specification

Maximum 4RU Industrial Rackmount Case

Z87-PRO MotherBoard (or equivalent)

Intel i7 Core Processor, 3.5GHz,

16 GB Dual Channel Ram

2 x 120 G SSD SATAIII System Drives (Mirrored) Raid 1

2 x 240 G SSD SATAIII Data Drives (Mirrored) Raid 1

1 x 4 Way Removable SSD Drive Caddy (Non Hot Swap)

850W Power Supply, 80 PLUS Gold Certified, Full Modular

FirePro W9000/W7000 graphics Card (number of outputs to match Schematic and Technical description)

Win 7 Pro 64 Bit Installed

DVD - CD Burner

NOTE

Computer to be supplied with the number of outputs as per the Schematic and the Technical Description.
All display port connections will be provided with active Display Port – DVI adaptors.

NOTE

Each computer designated as “Watchout Computer” in the Specification and the Schematic will be supplied with a Dataton Watchout V6 (or latest current version) license key/dongle. An additional Watchout key will be supplied for the Admin computer.

Typically

A custom built multimedia computer supplied by Interactive Controls (www.interactivecontrols.com.au) to meet the specification or a similar product equivalent in function, quality, etc. to the approval of the Superintendent.

Interactive Computer

Description The computer will be suitable for interactive operations with the MM5.1 Map Table, providing serial (USB) interface with the touch screen overlay, two HD quality outputs from a dedicated Graphics card (no Mother Board graphics), and Ethernet capacity.

Minimum Specification

3RU Optimised and Tuned interactive Computer.

Z170 Series MB with Intel , i7 4 Core 3.4 GHz Processor

8 GB DDR3 Ram,

Raid Pair Intel Enterprise SSD HD System Drive 128GB,

SSD's mounted in Full Metal Dual Bay HDD Caddy with Removable Draws

AMD R7 Graphics, DVI, Display port, HDMI,

Windows 7 64bit Professional,

Corsair Gold Certified, Semi Modular, 550 W PSU,

CD/DVD,

3 RU Rackmount Industrial Case.

Typically Custom Built Interactive Computer from Interactive Controls (www.interactivecontrols.com.au)

Dataton Watchpax 2 Media Player

Description

The Watchpax 2 media player is specified for projected images.

WATCHPAX is a dedicated media player for WATCHOUT shows, an alternative to PCs. It is performance-optimized for use with WATCHOUT with built-in WATCHOUT software and license.

Minimum Specification

Small footprint: 127 x 148 x 22 mm

Weight: 475 gr

SSD (Solid State Disk)

2 x Mini DisplayPort – resolutions up to 2560 x 1600 (WQXGA)

3.5 mm stereo audio out

2 x USB3 ports

Gigabit Ethernet

Typically Dataton Watchpax 2 media player

SOUND DEVICES - Speakers

Broadcast Audio - Speaker

Description

A compact indoor loud speaker for applications where foreground/background music is required, featuring exceptional intelligibility and musical performance, with minimum aesthetic impact.

The loudspeaker shall be a 6" 2-way surface mount speaker with a U bracket fixture.

Overall cabinet dimensions shall be no greater than 320 mm high by 220 mm wide.

The finish shall be a paintable lightly textured black.

The speakers will include mounting hardware providing vertical and horizontal rotation.

Specification

Power Handling:	50W
Maximum SPL:	91 dB
Colour finish:	Non-reflective black
Coverage:	120^0
Woofer:	min 6"
Tweeter:	min 1"
Frequency response:	250 Hz to 10 KHz

Typically Cloud CS-S6

Broadcast Audio – Sub Woofer

Description

The sub-woofer will be surface mounted and include one 203.2 mm (8.0 in) low-frequency transducer with a first order frequency shaping crossover network installed in a ported enclosure. It will allow for direct connection to the 4/8 ohm low impedance circuit.

The speaker shall also include a surface mount bracket system that are also suitable for flying using optional forged eyebolts and suitable cables.

The maximum overall height shall be no more than 275 mm, the maximum depth shall be no more than 210 mm, and the maximum width shall be no more than 420 mm.

Specification

Power Handling:	100W
Maximum SPL:	110 dB
Colour finish:	Non-reflective black
Woofer:	min 8”
Mounting:	Surface mount bracket or flying
Frequency response:	58 Hz to 500 KH

Typically CS-SUB8

Broadcast Audio - Amplifier

Description

A multi-channel general purpose, high quality, multi-channel, power amplifier designed for relatively low power sound reinforcement applications that exhibits low levels of noise and distortion, and utilises the highest quality components, ensuring outstanding sound quality, very low inter-channel crosstalk and rugged durability. The amplifier will be rack mountable, deliver their rated power loads for long periods of time and include protection against thermal overload.

Pairs of channels may also be operated in Bridge Mode.

Specification

Channels:	4 – 8 channels
Max output:	50W/channel (100W/channel in Bridge Mode)
Size:	2RU rack mountable
Input impedance:	10 kohms (balanced)
Output connectors:	Screw terminals
Status indicators:	Power, signal, peak
High Pass Filter:	-3db @ 65kHz, switchable per-channel
Frequency response:	10 Hz to 20 KHz
Power:	12vdc, 15 watts

Typically Cloud CX-A450 or CX-A850

Broadcast Audio – Point Source Speaker

Description: A miniature passive loudspeaker designed for high-quality distributed systems with a high performance to size ratio. Suitable for installations involving space limitations and visibility concerns for fixed applications such as theatre, museum displays, restaurants and in hidden locations.

Specification

Power Handling:	18W
Maximum SPL:	100 dB
Colour finish:	Non reflective black
Speaker:	2” in aluminium housing
Coverage:	90^0
Mounting:	Surface mount
Frequency response:	150 Hz to 18 kHz

Typically: K-Array KT2 (c/w KA1-T2H Amplifier module)

Directional Bar Speaker

Description

A mono directional line array speaker offering a broad range sound experience with the frequency response is tailored for voice and incidental music.

It will be factory adjustable for both mounting height and pattern width. It will provide good sonic isolation between displays while providing good coverage of the listeners regardless of their height.

The exhibition support plinth has been specifically designed to accommodate the speaker size shown in these specifications.

Specification

Channels:	Monaural
Max output:	90dba @ 4m
Size:	50 x 83 x 559/585/635/760/915/965 millimetres
Weight:	2.3kg
Colour finish:	Non reflective black powder coat
Input level:	Adjustable -15dbv to +4dbv
Input impedance:	5,000 ohms transformer balanced
Focal pattern:	Highly directional side to side with a wide vertical pattern
Mounting:	One screw mounting hole at each end
Frequency response:	250 Hz to 10 KHz
Power:	12vdc, 15 watts

Specifically Dakota Audio MA-5-NN

TRANSMISSION DEVICES/EXTENDERS

USB Extender

Description	A transmitter/receiver to deliver USB over CAT6 UTP cable up to 45m. Minimum requirements are that they be transparent to the operating system, provide remote device power, have plug and play operation and be fully USB 2 compliant. Preference will be given to devices that are powered at the host end.
Typically	Gefen EXT-USB-MINI2N

Audio Extender

Description	A transmitter/receiver capable of extending unbalanced stereo analog audio up to 300 metres over a single CAT-6 cable. Preference will be given to devices that are powered at the host end.
Typically	Gefen EXT-AUD-1000

HDBaseT Transmitter/Receiver

NOTE	Where ever possible the cable connecting the source device to the HDBaseT Transmitter will be DVI or Display Port in preference to HDMI.
Description	An HDBaseT extender that provides... • Single-sided connections for LAN, HDMI, Control and Power. • POE or AC adapter from either side. • Connection via a single CAT 5e/6/7 cable up to 100m. • 1080p 60Hz 48bit colour depth with bi-directional RS-232, IR, & LAN.
Typically	Lightware DVI-HDCP-TPS-TX/RX95

CONTROL SYSTEM

Multimedia System Control

Description	An all-in-one embedded Show Controller fitted with all necessary show protocol interfaces. It controls and synchronizes dimmers, lighting desks, video projectors, video servers, media players sound processors etc. It also provides digital inputs and relay outputs. Functionality includes device synchronization and logical programming, as well as real time testing. It includes at least one timeline for synchronized show programming and provides an easy drag and drop interface for building up to 3 HTML touch screens (WebPanels). It should also support third party networked Serial, I/O, Infrared, MIDI, and DMX (ArtNet) interfaces
Typically	Barco/Medialon Showmaster LE (https://www.interactivecontrols.com.au/product/medialon-show-master-le/)

POWER DEVICES/RACK INSTALLATION

ONErack™

Description	ONErack is a universal, powered mounting system that vastly improves rack installation of small devices. It converts randomly sized, externally-powered devices from any manufacturer into slide-in modules that can be installed quickly and cleanly and serviced easily. Chassis are available in 4RU, 5RU and 6RU and can hold up to 16 modules with up to 2 voltage selectors each. When using the ONErack Power Supply, each voltage selector, can provide power @ 5v, 7.5v, 9v, 12v, 13.5v, 18v, & 24v up to 35 watts. The ONErack™ system is specifically nominated for all low voltage, externally-powered devices. No plug type power adaptors (wall warts) are to be used in the installation.