

Playhouse

Sydney Opera House

Technical and Production Information Playhouse

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Technical and Production Information

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1 Introduction

The Playhouse offers an intimate atmosphere and excellent sightlines from every seat, and is best suited to single-set productions such as small musicals, dramas and recitals. It is also an excellent venue for seminars and film.

The venue is located on the ground floor in the south-western corner of SOH, beneath the Concert Hall, and is served by the Western Foyer (WF) which is accessed via the Western Broadwalk.

The WF is shared by The Studio, Drama Theatre and Playhouse (PH) and offers unmatched views across the harbour to the Sydney Harbour Bridge.

The PH walls and seats are clad in white birch timber, with the wall panels closest to stage covered in black wool to minimise light reflection.

The venue has an end-stage with no wing space, and a hanging system over the stage with 20 battens operated on electric winches, but no fly tower above.

It is intended that this document is read in conjunction with the SOH Event Guide.

1.1 List of Acronyms

BOH	Back of House
CP	Central Passage
EWP	Elevated Work Platform
FOH	Front of House
GR	Green Room
LD	Loading Dock
OP	Opposite Prompt (Stage Right)
PH	Playhouse
PS	Prompt Side (Stage Left)
SM	Stage Manager
SMD	Stage Manager's Desk
SOH	Sydney Opera House
WF	Western Foyer



2 Risk Management

In NSW, if you conduct a business or undertaking, you are legally obliged to manage certain risks. You must:

- Identify and eliminate risks to health and safety, or, if that is not practicable, then minimise those risks so far as is reasonably practicable; and
- Ensure the health and safety of your own workers, AS WELL AS ensure that other workers' or persons' safety is not put at risk by work carried out as part of your business or undertaking.

Work health and safety obligations in NSW are non-transferable and concurrent. This means that:

- Each business or person with safety obligations must comply with their WHS requirements; and
- If more than one business or person has a duty under the law, then they must comply to the extent that they can influence or control the safety matter.

Please refer to the SOH Event Guide.

2.1 Smoke Management System

The smoke management system in the venue consists of a smoke curtain located above the auditorium seats in row C. In the event of the fire alarm system being triggered, this curtain will automatically lower from the ceiling, stopping 2.1m above the floor. This is designed to contain any smoke and allow patrons to leave the venue without undue delay.

At the same time all the emergency panic lighting will automatically switch on, the smoke exhaust fans located at the top of the stage tower will start and make-up air (sourced from the foyer) will be delivered via the ducts located under the seats in the auditorium.

Special Conditions to the Smoke Management System

- To ensure that make-up air can replace the air that is extracted from above the stage, there must always be at least 15m² of open space between the auditorium and the stage
- Before any scaffolding is built that may impede the travel of the smoke curtain, arrangements must be made with SOH Fire & Safety to isolate the smoke curtain to avoid any damage should the curtain drop onto the scaffold
- No cables may be installed that will interfere with the travel path of the smoke curtain. Any cables installed along the side of the auditorium must either use the special conduit paths above the curtain on the side walls or cross the path of the curtain below the guides that are mounted on the side walls



2 Venue Access

Access to the PH Scenery Dock from the main SOH Loading Dock (LD) is via Lift 21 and then through Central Passage (CP) on ground level.

The PH Scenery Dock and stage are 985mm above ground level. Forklifts are available to assist with loading equipment to dock level and must be operated by SOH staff.

Access to the PH Scenery Dock is via one of two doors: double doors from the side of the dock, or a roller shutter door directly off CP.

Stage access from the PH dock is via a large sliding fire door in the up-stage OP wall.

Access Door Dimensions	
Double Door	2.19m W x 2.27m H
Roller Door	1.62m W x 2.32m H
Sliding Fire Door	5.3m W x 2.27m H

All crew must wear high visibility clothing and safety boots when traveling between the main LD and venue.



3 Venue Dimensions

Dimension	No Extension	Half Extension	Full Extension
Width (Widest Part)	13.4m	13.4m	13.4m
Width (Up-stage Wall)	10.2m	10.2m	10.2m
Depth	6.77m	7.72m	8.67m
Overhead Hanging Height ¹	6.5m	6.5m	6.5m
Drift	6.5m	6.5m	6.5m
Seating Capacity	398	376*	353**

¹ There is no fly tower - the hanging battens sit between architectural concrete ribs in sets of five battens per bay. There are no penetration points through this concrete structure. See Rig Plan.

* First row of seats removed

** First and second rows of seats removed

Dimensions are approximate and critical measurements should be confirmed on site.

3.1 Stage Description

Surface	50mm Oregon timber, overlaid with a 9mm Weathertex sheeting, painted black
Stage Rake	0 degrees (flat)
Max Loading	7.5kPa (500kg/m ²) – distributed
	4.5kN (450kg) - concentrated

3.2 Stage Plans

Stage plans are available at sydneyoperahouse.com

Scale plans can be requested through SOH Event Operations as PDF's or as Vectorworks files. Email techspec@sydneyoperahouse.com or through your SOH Production Manager.

Uncontrolled copies can be found in the appendices of this document.

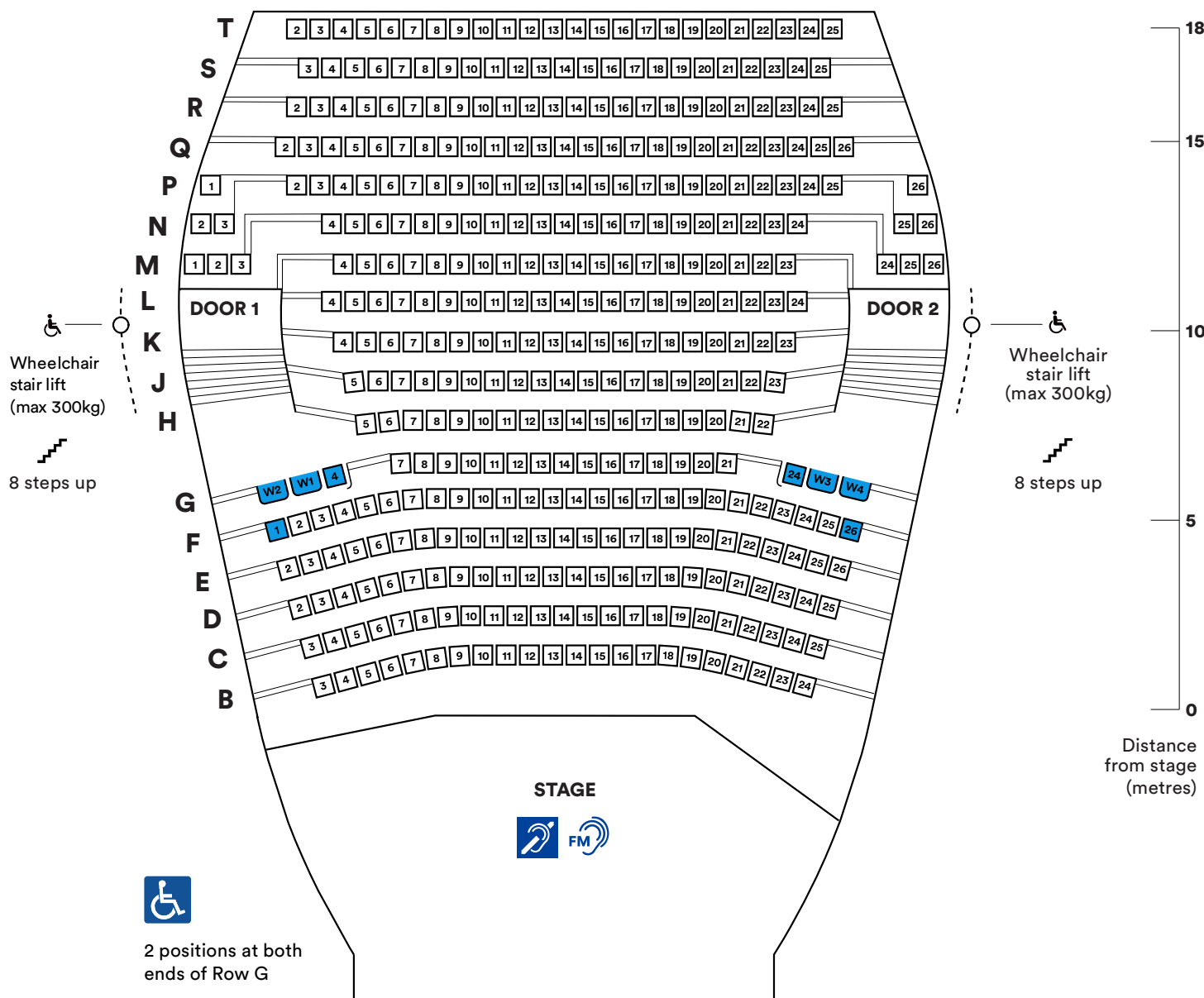


3.3 Auditorium Seating

The maximum seating capacity is 392 (note that there is no row A).

The entrance to the auditorium for patrons is through two doors from the WF. There are stairs from each entry door leading up to row H, then more stairs up to row T or down to row B.

There are four wheelchair positions in row G (two either side of the auditorium) with companion seats for each position.





4 Staging

4.1 Stage Machinery

The venue has a range of stage machinery that is controlled by the Beckhoff Automation system by Simple Motion, and may only be operated by SOH staff.

4.1.1 Over-Stage Battens

Over-stage consists of a concrete ribbed ceiling with battens, for which there is no provision for flying, only hanging.

Battens may be driven individually or one bar per bay in a group.

Hanging System Dimensions	
Maximum Drift	6.5m
Number of Usable Battens	20
Batten Cross Section	100mm H x 50mm D
Batten Length	8.0m - 12.0m - see Rig Plan
Batten Extensions	Approx. 1.0m - 1.5m both sides of stage
Batten Arrangement	Four bays of five
Power Type	Electric winches / remote control
Max Load Capacity per Batten	350kg
Max Load Capacity per Bay	700kg

4.2 Stage Extension

The stage can be extended in depth towards the auditorium in two parts. The first extension (half) requires the removal of the first row of seats, the second (full) extension requires the removal of the first two rows of seats.

The standard stage arrangement for the venue is without any extension, and there are costs associated with installing and removing either half or full extension.

4.3 Sliding Fire Door

The upstage sliding fire door must be kept fully closed during performances, and the scenery dock cannot be used as an extension to the stage.

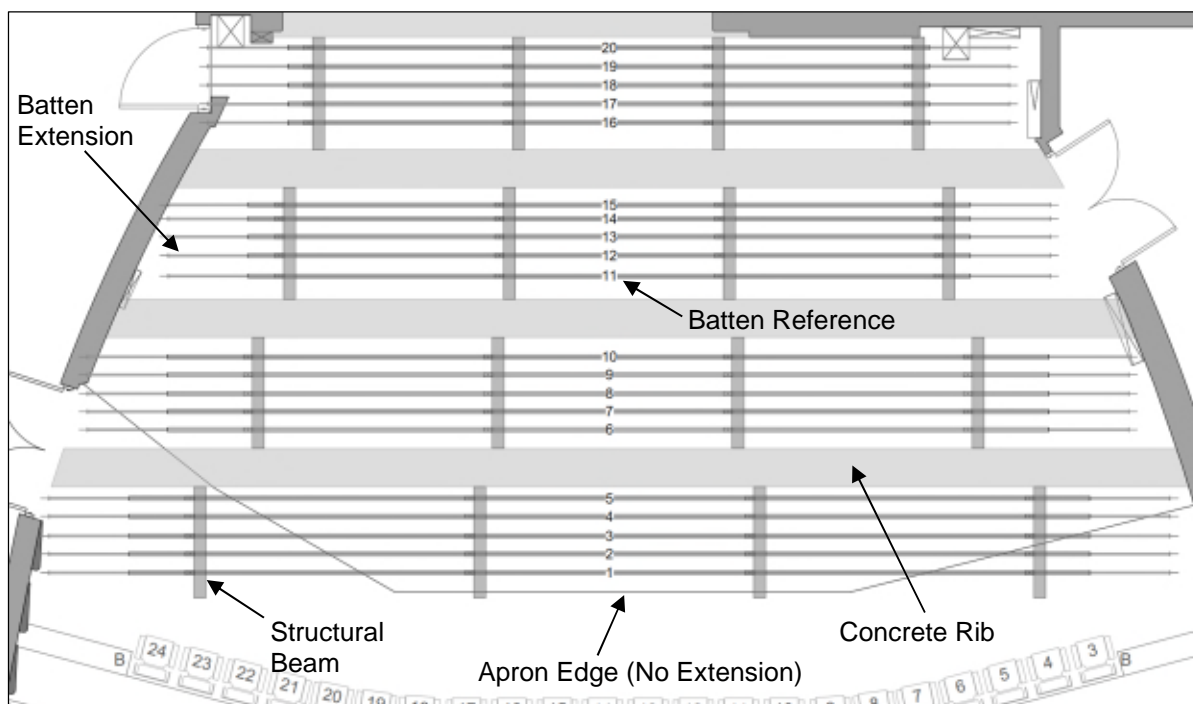


4.4 Batten Hanging Plot

Bay	Line	Type	Max Loading	Distance to Apron Edge (mm)		
				No Extension	Half Extension	Full Extension
1	1	Motor	350kg	235	1185	2225
	2	Motor	350kg	465	1415	2455
	3	Motor	350kg	685	1635	2675
	4	Motor	350kg	925	1875	2915
	5	Motor	350kg	1145	2095	3135
2	6	Motor	350kg	1986	2936	3976
	7	Motor	350kg	2206	3156	4196
	8	Motor	350kg	2426	3376	4416
	9	Motor	350kg	2656	3606	4646
	10	Motor	350kg	2876	2966	4006
3	11	Motor	350kg	3865	4815	5855
	12	Motor	350kg	4115	5065	6105
	13	Motor	350kg	4345	5295	6335
	14	Motor	350kg	4565	5515	6555
	15	Motor	350kg	4735	5685	6725
4	16	Motor	350kg	5739	6689	7729
	17	Motor	350kg	5969	6919	7959
	18	Motor	350kg	6199	7149	8189
	19	Motor	350kg	6429	7379	8419
	20	Motor	350kg	6659	7609	8649



4.5 Rig Plan



4.6 Standard Staging Equipment

The following equipment is included within the venue hire costs:

Element	Equipment	Allocation	Details
General Furniture	Card Table	3	830 x 830mm Square Top
	Trestle Table	2	1800 x 750 Top
	Vinyl Chair	10	
	Black Screen	4	
Wardrobe	Wardrobe Rack	3	
	Desk Unit	2	Portable with mirror/screen



4.7 Elevated Work Platform (EWP)

The venue EWP allocation is as below. All operators must be licenced.

Equipment	Allocation
Uplift UG30	1

4.8 Additional Staging Equipment

The following sections of equipment can be utilised by your production at an additional cost, subject to the requirements of the other venues.

4.8.1 Masking

The following cloths are allocated to the venue at an additional cost:

Element	Equipment	Allocation	Details
Masking	Leg	3 pair	Black, 3500 x 6400
	Border	1 pair	Black, 14000 x 600
	Border	1 pair	Black, 14000 x 1000
	Border	1 pair	Black, 14000 x 1500
	Smother	1	Black, 14000 x 6400
	Tabs	1 pair	Black, 7500 x 6400
Additional masking may be allocated upon request			



4.8.2 Additional Equipment

The following equipment can be utilised by your production at an additional cost.

Element	Equipment	Details
Rostrum	Megadeck 1.2 x 2.4m	Carpeted
	Megadeck 1.0 x 2.0m	
	Megadeck 1.0 x 1.0m	
	Megadeck Legs	200 / 400 / 600 / 800mm
Floor Covering	Black Carpet	Not custom for stage
General Furniture	Card Table	830 x 830mm Square Top
	Trestle Table	1800 x 750 Top, Various Colours
	Cabaret Table	600mm or 900mm Round Top
	Vinyl Chair	Black, Padded
Orchestral Furniture	Padded Orchestral Chairs	Height Adjustable
	Music Stands	
	Conductors Stand	
	Base Spike Board	
	Cello Riser	
Cloths	Sharkstooth Gauze	Various
	Filled Cloth	Various
	Push-up Drapes on Poles	Black, Various sizes
	2m Book Flat Masking	Black or Grey, Padded
	1.3m Book Flat Masking	Black, Padded
Rigging	1T Chain Block	7m chain
	1/2T Chain Block	
	Tail Pipe	20-25mm, various lengths
	Mini Quad Truss	100mm, various lengths
	Tri Truss	Various lengths
	Box Truss	Various lengths



5 Lighting

5.1 Standard Lighting Equipment

The following equipment is included within the venue hire costs:

5.1.1 Control

The lighting system is controlled by an ETC Gio@5 console in the control room, with an ETC Gio running as a tracking back-up.

Both consoles have 24K channels and use an ELC DMX over Ethernet system for DMX distribution.

An ETCNomad Puck is available for use with designer's monitors at the production desk, which can be temporarily set up in the stalls during production set-up and rehearsals.

An ETC Pad (remote control unit) is available for rigging and focussing sessions on stage.

5.1.2 Data

SOH has an ELC DMX over Ethernet system. It utilises sACN to distribute an almost infinite number of DMX universes.

In the venue it appears in the control room, dimmer room, stage area and in the auditorium. Some points have permanently installed Ethernet to DMX nodes, and extra nodes can be installed on request at an additional cost.

External network devices must be approved by SOH prior to installation onto the network. Alternate protocols such as ArtNet are not permitted to run on the House network. Please advise if protocols other than sACN are required

5.1.3 Power

All general and dimmed electrical power supplies are 240v AC @ 50Hz.

Additional 3-phase supplies (415v AC) are available with Wilco pattern 5-pin connectors (or with a distribution board at additional costs).

5.1.4 Dimmers

Three Solution X 96 dimmer racks are installed in Plant Room 41 (adjacent to Dressing Room 6) and are fitted with 3kW and 5kW dimmers.

Venue dimmer distributions:

Position	Allocation
FOH 3kW	78
Over-stage Area Multicore Outlets, 3kW	174
Over-stage Area, 5kW	4
Stage Floor, 5kW	24



5.1.5 Lighting Positions

Position	Details
FOH Audience Bar 1	A fixed bar over row E Accessible for rigging and focusing via a catwalk lowered from the ceiling 36 x 3kW dimmer outlets available
Orchestra Bar	Tri-truss permanently mounted on chain motors Positioned between FOH Audience Bar 1 and batten 1 24 x 3kW dimmer outlets (via mounted patch bars and Wielands), plus six 240v hot power circuits (via mounted patch bars and Wielands) available
FOH Booms	Three each side of the auditorium Six 3kW dimmer outlets available each side Booms can be electronically driven into rigging height and driven out again to a show dead
Stage Area	29 x 2m lighting bars that can be rigged on any of the 20 overhead hanging battens may be available depending on the requirements of other venues Hanging patch Tony Bars can be hung from battens Each Tony Bar has six 10A outlets which are connected to multi-core cables and plugged into dedicated dimmer outlets in the grid
Stage Floor	24 x 5kW dimmer outlets Each dimmer appears on both sides of the stage

5.1.6 House Lights

The main house lights are warm white LED fixtures. The house lights can be controlled by the lighting desk or a manual fader system on a highest-takes-precedence basis.



5.2 Additional Lighting Equipment

The following equipment can be utilised by your production at an additional cost.

Lamp Type	Allocation
Selecon Rama Fresnel 1.2kW	40
Strand SL 15/32	30
ETC Source 4 Jnr Zoom 25/50	20
Cadenza Fresnel 2kW	12
Martin Rush MH6 LED Wash	10
Additional lamp and effects stock may be available upon request at an additional cost	

5.2.1 Followspot

A followspot can be installed in the interpreters' booth at the rear of the auditorium at an additional cost.

5.2.2 Music Stand Lights

24V LED sconce lights are available to fit music stands at an additional cost.



6 Sound & Audio Visual

6.1 Standard Sound Equipment

The following equipment is included within the venue hire costs.

6.1.1 Loudspeaker System

The venue has a permanently installed D&B Audiotechnik loudspeaker system:

Component	Equipment	Allocation
Main Left - Right PA	D&B Audiotechnik Q7	2
	D&B Audiotechnik E8	2
Centre PA	D&B Audiotechnik Q10	1
Subwoofers	D&B Audiotechnik Q-Subs	2
Delays	D&B Audiotechnik 8s	4
Front Fill*	D&B Audiotechnik E4	4
Control	D&B R1	

*Front fill can be added to the down-stage floor for fill to the first two rows

6.1.2 Mixing Console

It is recommended that all productions involving live music or radio mics be mixed from the auditorium for best results.

Control Room

An SSL L100+ system is permanently installed in the control room comprising of

- Permanently installed I/O
 - 32 microphone preamplifiers
 - 16 Line I/O
 - 16 AES I/O

Stalls Positions

A 12 fader, SSL Remote Tile with a touchscreen running SOLSA software can be utilised at the following alternate mix positions.

- Position 1 – A mixing console can be positioned in the house left side of the auditorium. This requires six seats to be removed and held from sale (M24-26, N25-26, P26).
- Position 2 – A mixing console can be positioned towards the rear centre of the auditorium. This requires eleven seats to be removed and held from sale (S7-11, T6-11).



6.2 Additional A/V Equipment

The following equipment can be utilised by your production at an additional cost. Audio

Equipment	Model
Mixing Consoles/Remote Surfaces	SSL L650 Console SSL L350+ Console SSL Remote Tile with a touchscreen running SOLSA software Yamaha QL1 Console
Stage Monitors	D&B Audiotechnik M4 D&B Audiotechnik Y-SUB D&B Audiotechnik V series line array. D&B Audiotechnik V-Sub D&B Audiotechnik V10P D&B Audiotechnik Y10P D&B Audiotechnik Y7P D&B Audiotechnik E8
Radio Microphones – Belt-packs (Shure Axient Wireless System)	<u>AXT 100 Belt Packs:</u> DPA 4066 DPA D:Fine DPA D:Fine 66 DPA 4061 DPA 4080 DPA 6066
Radio Microphones – Handheld (Shure Axient Wireless System)	<u>AXT 200 Handhelds:</u> Shure KSM9 Shure Beta 58 Shure SM58
Shure In-Ear Monitors	Stereo PT10T dual wireless transmitters P10R wireless body-pack receivers SE425 earpieces
Wired Microphones	SOH have a wide range of microphones from brands such as Sennheiser, Shure, AKG, DPA, Beyer and Neumann and offers a variety of packages to suit
Additional Playback	MacBook Pro running QLab



6.2.1 Video Replay

The Sound & AV department has a range of playback options and switchers. SOH vision equipment is shared between all venues and its use in the PH is subject to availability and will incur additional charges.

Equipment	Model
Switchers	Barco Image Pro Blackmagic Design ATEM 2 M/E Production Studio 4K
Vision Playback	MacBook Pro Sound Devices Pix 270i

6.2.2 Projection and Video Monitors

There is one standard projection position from the control room, which works well with a long throw lens and can fill a screen as wide as the stage.

Note that for this arrangement, a screen must be rigged on stage and the projector set-up in the control room, then struck at the conclusion of the event.

Element	Equipment
Projectors	Barco HDX 14k
Screens	Stumpfl 7.3m x 4.1m (24ft x 13.5ft) 16:9 ratio fastfold Stumpfl 6.1m x 3.4m (20ft x 11.3ft) 16:9 ratio fastfold Stumpfl 4.8m x 2.7m (16ft x 9ft) 16:9 ratio fastfold Stumpfl 3.6m x 2.1m (12ft x 7ft) 16:9 ratio fastfold
Video Monitors	LCD 75" LCD 55" OLED 17"



7 Communications

7.1 Stage Manager's Desk

A Stagetec Stage Manager's Desk (SMD) is located in prompt corner. The desk is fully programmable, includes four broadcast-quality show relay screens, a telephone, two integrated Riedel Artist communications panels and dynamically assignable tactile LED buttons.

The SMD controls audio and video relay to both FOH and BOH spaces and can be used to broadcast live or pre-recorded announcements to backstage or foyer spaces.

There is an automatic message stacking facility to prevent conflict with other venues when announcements are simultaneously sent from other venues to common areas of the building, such as the Green Room (GR). Features include dynamic allocation of paging, program audio relay, cue lights, and foyer bells.

FOH functions are generally managed by the Theatre Manager from a touch screen in the foyer, however these functions are also accessible at the SMD.

7.2 Show Relay

A colour image of the venue stage is distributed to the SMD, lighting control, sound control, GR, some dressing rooms, and venue foyers. The SM has pan, tilt, and zoom control of the longview camera. A low-light camera is also permanently installed and sends vision to the SMD.

Longview and low-light feeds can be sent to most areas of the building by arrangement and can be sent to the Recording Studio for archival recordings (Refer to SOH Event Guide for further details on archivals).

7.3 Headset Communications

A Riedel Artist wired intercom system operates across all venues. Permanent talkback stations are available in lighting and sound control locations, and wired headset tie lines are installed at all regular operating positions.

A Riedel Bolero wireless belt-pack system is fully integrated with the Riedel Artist wired intercom system and is included within venue hire costs as per the below table.

Equipment	Allocation	Details
Wireless Belt-pack Comms	12	Riedel Bolero BBP
Additional units may be provided upon request at a per unit charge		



8 Production Desks

SOH can provide production desk equipment in the auditorium as part of the venue rental, with costs for labour to install or remove.

Standard set-up for this venue:

Equipment	Allocation	Details
Production Desk	2	Set-up in row L in stalls, Operators in row M
Comms Panel	4	Riedel DCP1016
DELEC Panel	1	Links to SM system, enables BOH calls & cue lights
Phone	1	Avaya IP phone
Additional units may be provided upon request, pending availability. In the event of SOH stock exhaustion, costs may be applied.		



9 Backstage Facilities

9.1 Dressing Rooms

There are seven dressing rooms allocated to the venue.

Six rooms have adjoining shower and toilet facilities and can accommodate three to four artists each. One room can accommodate three artists but has no en-suite facilities.

A selection of dressing rooms have lockable lockers, drawers and small cupboards, the keys for these are available from your SM. Lockers and drawers must be cleared and keys returned at the conclusion of the hire period.

9.2 Wardrobe, Laundry and Kitchen Facilities

Located behind the stage are laundry and kitchenette facilities with sink, refrigerator, urn, filtered water tap and microwave.

Ironing equipment and a steamer are available upon request.

Venue laundry allocation:

Equipment	Allocation
Electric clothes dryer	1
Top loading clothes washing machine	1
Upright electric drying cabinet	1

9.3 Rehearsal Rooms

There is no rehearsal space dedicated to the venue. Rehearsal space is very limited across SOH.

9.4 Storage Space

Storage space on SOH site is very limited. If short term storage beyond the PH scenery dock capacity is required, it may be possible to store some equipment in CP upon request.



10 Protection of Building Surfaces

Appropriate measures must be taken to ensure the protection of all SOH building fabrics and surfaces, including wood, granite, glass, ceramics, concrete and bronze.

Prior consultation and approval is required for any plans to attach to or penetrate building surfaces.

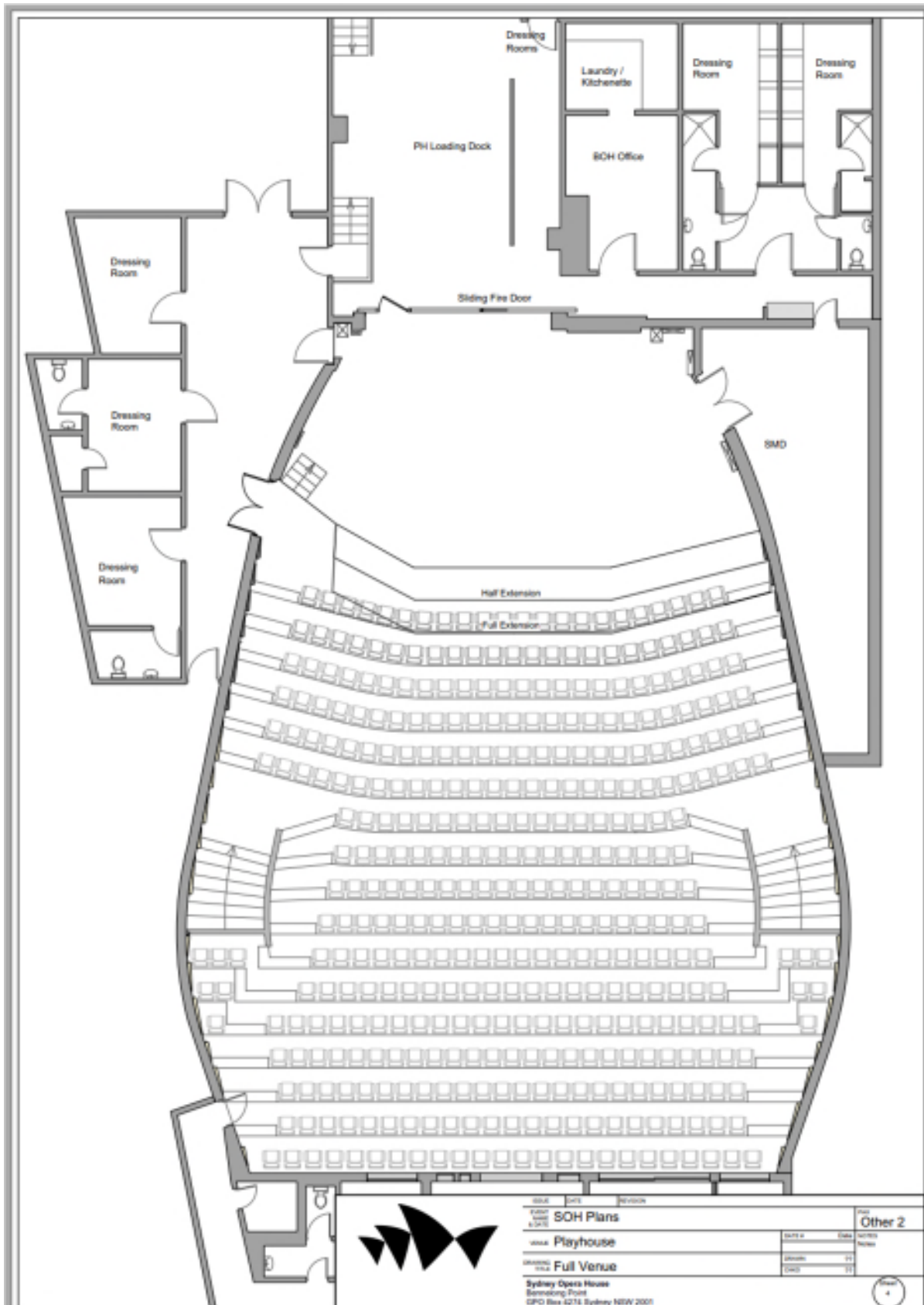
You must provide suitable rubber pads, plywood sheets or plastic to protect all building surfaces including but not limited to floors, walls, chairs, and ceilings.

The use of paints or chemicals on SOH building surfaces or fixtures is prohibited. Similarly, any use of water, soaps or cleaning fluids of any kind must be pre-approved by Building Operations.



11 Appendices

11.1 Venue Plan – Full Stage, BOH and Auditorium





11.2 Venue Plan – Section

