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Perth Children's Hospital

A Case Study in What Hospital Schedules Actually Break Over

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Project at a Glance

- **Project:** Perth Children's Hospital (PCH), 298-bed tertiary paediatric hospital and trauma centre, Nedlands, Western Australia
- **Client:** Government of Western Australia, through the Department of Treasury (Strategic Projects) and the Department of Health
- **Managing Contractor:** John Holland Pty Ltd (JHPL)
- **Delivery method:** Two-stage Managing Contractor model (fixed-price MC after Stage 1)
- **Design team:** JCY Architects, Cox Architecture, Billard Leece Partnership, HKS Inc
- **Groundbreaking:** January 2012
- **Original scheduled practical completion:** Mid-2015, revised to 31 August 2015
- **Certified practical completion:** 20 April 2017 - 591 days after the revised 31 August 2015 deadline
- **Public opening:** May-June 2018, with the final patient transfer from Princess Margaret Hospital in June 2018
- **Approximate total project value:** AUD 1.2 billion
- **Settlement:** In 2022, the Western Australian government paid John Holland AUD 38 million to settle a AUD 300 million Supreme Court compensation claim over delays and disputed scope

Why This Case Matters

Perth Children's Hospital is one of the most thoroughly documented public hospital construction failures in the Australian record. A Parliamentary Public Accounts Committee inquiry, a Building Commission audit, an Auditor-General report, and years of public reporting produced a detailed account of what went wrong and why. Unlike most troubled projects, where the internal story stays internal, PCH's problems were examined in the open.

For anyone scheduling complex hospital work, the case reads as a near-perfect demonstration of the structural risks that the Complexity Series identifies in healthcare

projects: layered regulatory review, specialised MEP and commissioning requirements, overlapping phases of construction and occupancy readiness, and the reality that substantial completion is not the finish line. PCH did not miss its opening date because the trades were slow. It missed because nearly every other risk that hospital schedules carry materialised in sequence, and the delivery structure did not absorb any of them gracefully. This case study examines the project's scheduling history, the specific events that drove the delay, and the lessons that apply to any team delivering or overseeing a hospital project of similar scale.

Background and Delivery Structure

PCH was announced in 2008 as a replacement for Princess Margaret Hospital, Western Australia's existing paediatric facility. Construction began in January 2012 under Premier Colin Barnett and Health Minister Kim Hames.

The project was procured as a two-stage Managing Contractor arrangement. Stage 1 covered design development and external subcontract pricing in parallel with early works and concluded in December 2012. Stage 2 was executed under a fixed-price MC awarded to John Holland, with JHPL responsible for design and construction management.

The Managing Contractor model is common in large Australian public work and has the same conceptual appeal as Progressive Design-Build in the U.S.: early contractor involvement, flexibility during design development, and coordinated procurement. It also has the same structural risks: overlap between design completion and construction start, float ownership ambiguity between phases, and dependence on active client engagement throughout. PCH exhibited all three.

The hospital is a 298-bed tertiary facility with 75 percent single rooms, 31 isolation rooms, 12 operating theatres including an intraoperative MRI, and two interventional theatres. By any measure this is a complex hospital program, sitting at the intersection of high-acuity paediatric care, extensive isolation requirements, and the specialty rooms that routinely drive hospital critical paths.

The Headline Delay

The simplest way to state the schedule outcome is that practical completion was granted approximately 591 days late against the revised 31 August 2015 deadline, and the hospital did not accept its first patients for another full year after that. The opening sequence unfolded as follows:

- **Original scheduled practical completion:** 2015 (revised to 31 August 2015)
- **Actual practical completion:** 20 April 2017
- **Post-practical-completion commissioning, remediation, and regulatory clearance:** April 2017 to May 2018
- **First outpatients admitted:** May 2018
- **Final patient transfer from Princess Margaret Hospital:** June 2018

Roughly 33 months passed between the originally scheduled completion and actual patient occupancy. The gap between practical completion and opening alone was about 13 months - a period that in most commercial projects would represent substantial completion to occupancy with punchlist, but at PCH represented an ongoing sequence of defect remediation, regulatory clearance issues, and commissioning work.

What Actually Went Wrong

The Public Accounts Committee identified six principal problem areas, of which this case study examines the most consequential: the non-compliant fire doorsets, the asbestos discovery in imported cladding, the lead-in-water contamination, and the ICT subcontractor difficulties. Each illustrates a different category of risk that hospital schedules routinely carry.

1. The Fire Doorsets: Compliance Failures Compound Into Schedule Events

The hospital has 937 fire doorsets. Concerns about whether their installation complied with Australian standards emerged in late 2015. By April 2016, the government confirmed that more than 900 fire doorsets would need to be reinstalled. It was not until January 2017 that Strategic Projects could advise that all fire doorsets were fully compliant.

In scheduling terms, this is a classic hospital pattern: a life-safety system that is essential for any hospital to operate, distributed across nearly every compartment of the building, discovered to be non-compliant after significant installation progress. The remediation scope was not a simple replacement. Each doorset had to be assessed, re-documented, in

many cases reinstalled, and then re-certified. The activity cut across almost every fire compartment in the facility and affected trades that had already moved on.
The root cause was documentation and certification discipline during installation, not the doors themselves. This is the kind of compliance failure that commercial hospital GCs encounter precisely because hospital work demands a documentation standard well beyond typical commercial construction. A fire doorset is not fit for use unless its certification chain is intact.

2. The Asbestos in Imported Cladding

In mid-2016, a worker cut into a sealed panel on the hospital's level 8 atrium roof and discovered material that looked like asbestos. Government tests confirmed the panels contained chrysotile (white) asbestos. The product was a fibrous filler used to prevent vibration between external cladding and internal panelling, imported from Chinese manufacturer Yuanda. Approximately 150 panels were affected.
Yuanda's Australian managing director claimed the company had been the victim of fraudulent test certificates provided by two Chinese suppliers. John Holland had independently tested the panels in 2013 and found them asbestos-free; the later discovery indicated either inconsistent batches or failure in the original supplier-certification process.
The direct schedule impact came from several sources: work stoppage and area isolation on the affected floor, worker health monitoring and testing, containment and removal scope, and the downstream investigation into whether other Yuanda-supplied products on the project contained similar contamination. The indirect impact was larger: regulatory and media attention that forced a broader review of the project's supply chain and certification chain.
For hospital schedules, the lesson is pointed. Supply chain risk is real and growing. Import-based materials from offshore suppliers can arrive with certification that does not hold under testing. A product that is installed cannot be un-installed quickly, and the downstream testing and certification burden when a problem is discovered falls on the schedule, not on the supplier.

3. Lead in the Potable Water System

Of all the PCH problems, lead contamination in the water supply was the one that defined the post-practical-completion period. Lead contamination was a recurring issue that

contributed to multiple delays before the 2018 opening, with corroded brass fittings identified in past investigations as a likely source.

Eleven months after practical completion was granted, the hospital remained unopened, with the water not yet deemed safe to drink. In the post-practical-completion period, the discovery of non-compliant plumbing components was identified as part of the problem. Treatment approaches included orthophosphate dosing to reduce lead leaching, flushing protocols, and eventual plumbing component replacement. Each round of testing had to demonstrate sustained compliance with Australian Drinking Water Guidelines before the hospital could open for paediatric patients, a population for which any lead exposure is unacceptable.

The scheduling insight is that potable water safety is a regulatory gate that operates independently of construction completion. A hospital can be physically finished and still be unable to open because its water system has not cleared regulatory review. Neither the MC contract nor the construction schedule anticipated the duration of this remediation process, and the mitigation work competed for attention with other post-practical-completion issues.

4. The ICT Subcontractor Problems

From at least June 2015, the project's main oversight body (the Taskforce) was discussing JHPL's management of its technology subcontractor. In the post-practical-completion period, key aspects of the hospital's ICT requirements proved difficult to complete. Hospital ICT is not just a data network. It includes nurse call, patient monitoring integration, EMR connectivity, RTLS (real-time location services), access control, paging, wandering patient management, building automation interfaces, and clinical device integration. These systems have to work together, not just exist. Each integration carries its own commissioning scope and its own failure modes.

The PCH experience confirms what hospital schedulers already know: ICT and low-voltage systems are disproportionate schedule risks relative to their cost share. They are installed late, commissioned in parallel with everything else, and their interdependencies are not always obvious until integration testing begins. Subcontractor performance problems in this category often emerge well after the trade could have been replaced without cost.

5. The Broader Governance Problem

The Public Accounts Committee focused its inquiry not on JHPL's performance (though the committee concluded JHPL's performance as MC was unsatisfactory) but on how effectively the State managed risks and issues on the project, both before and after they emerged.

This is an important distinction. The committee was not primarily asking whether John Holland caused the delay. It was asking whether the State's governance structure, its risk management, its oversight of the MC, and its response to emerging issues were adequate. The answer, in the committee's judgment, was that they were not.

JHPL sought an extension to 30 November 2015. Treasury rejected this request, arguing that JHPL did not provide sufficient evidence to support the five-month claim. This kind of back-and-forth between contractor and owner is normal on a major public project. What is notable is that the dispute over extensions was unfolding while the project's underlying problems (fire doors, cladding, water system, ICT) were emerging in parallel, and the governance structure was not able to address them efficiently in real time.

The Commissioning and Occupation Gap

The most striking scheduling feature of PCH is the 13-month gap between certified practical completion (April 2017) and patient occupancy (May-June 2018).

The initial commissioning period was to be implemented over 20 weeks commencing at practical completion. During this time there were many Infection Prevention and Management challenges to overcome when commissioning clinical areas within a building site. A phased opening of clinical areas commenced with outpatients, followed by day surgery, with final move day in June 2018.

A 20-week commissioning window stretched into a 52-week occupation gap because:

- Fire door compliance completion (to January 2017) left minimal slack before practical completion
- Lead-in-water remediation extended testing and regulatory clearance beyond any planned window
- ICT completion lagged the physical facility
- Infection prevention commissioning had to continue working around ongoing building-site conditions

This is the distinction between “substantial completion” and “fit for patient care” that every hospital schedule has to address. On PCH, the two were separated by more than a year of additional work. That gap was not modeled in the original MC schedule, and the contractual framework did not provide a clean mechanism for managing the extended period.

The Financial Endgame

In 2022, the State Government settled a three-year Supreme Court dispute by paying John Holland AUD 38 million, ending the company’s AUD 300 million compensation claim over construction delays. The Hospital’s construction was plagued by challenges including asbestos in the cladding, lead in the hospital’s water supply, and the hundreds of uncertified fire doors. The contractor insisted the state government was accountable for construction delays, but Premier Mark McGowan said he would fight the claim and stand up to the company.

The settlement amount - roughly 13 percent of the original claim - is instructive. Without access to the confidential settlement terms, the underlying schedule analysis, or the legal strategy on either side, one cannot draw precise conclusions. But the order of magnitude suggests that the final apportionment of delay responsibility was neither a complete victory for the contractor nor a complete victory for the state. A AUD 38 million settlement against a AUD 300 million claim implies that both sides’ positions had meaningful weaknesses when examined closely.

For forensic scheduling practitioners, PCH is the kind of case that likely produced a substantial body of delay analysis work on both sides. The fact pattern - mixed causation, concurrent delay, documentation gaps, and multiple independent delay drivers - is exactly the environment in which Windows Analysis, the Half-Step, and concurrency doctrine earn their keep. The final settlement figure reflects the analytical reality that no single party owned the delay cleanly.

Schedule Lessons for Hospital Projects

PCH is not a case where one lesson applies. It is a case where most of the structural lessons of hospital scheduling apply simultaneously.

Practical Completion Is Not the Finish Line

The 13-month gap between practical completion and patient occupancy is the most important number in this case. A hospital schedule that treats practical completion as the functional end date is a schedule that will be wrong. The regulatory clearances, infection prevention commissioning, life-safety re-certification, and operational readiness activities that follow practical completion have to be modeled as distinct scope with realistic durations.

Life-Safety Systems Are a Compliance Chain, Not a Product

Fire doorsets illustrate the principle that in hospital work, a physical item is only as compliant as its documentation chain. The installation was not the problem. The certification integrity was. Any hospital schedule has to provision for the inspection, documentation, and re-certification cycles that life-safety systems demand - including time for remediation if any part of the chain fails.

Supply Chain Risk Is Schedule Risk

The Yuanda cladding discovery demonstrates that imported components carry certification risk that can materialise long after installation. Hospital projects in particular should build verification steps into their procurement processes for any material that carries health or life-safety implications, and should schedule realistic contingency for remediation if supply chain problems are discovered mid-project.

Water Systems Are a Separate Schedule

Potable water compliance is a regulatory gate that operates on its own clock. The lead-in-water issue at PCH could not be resolved by construction effort alone. It required sustained testing, treatment intervention, component replacement, and independent regulatory clearance. Hospital schedules should treat water system commissioning and compliance as a distinct work stream with its own critical path and its own risk register.

ICT Integration Is Underestimated at Almost Every Hospital

The PCH ICT subcontractor issues echo a pattern on nearly every major hospital project: low-voltage and clinical integration systems are installed late, commissioned under time pressure, and reveal integration problems only during testing. Schedules that allocate

realistic duration for ICT commissioning - and that identify ICT as a potential critical path well in advance - tend to perform better.

Governance and Oversight Are on the Critical Path

The Public Accounts Committee's central finding was about State governance, not contractor performance. On public hospital projects, the client's governance structure, decision-making capacity, and risk management discipline are part of the schedule. An MC structure, a PDB structure, or any other collaborative delivery model presumes active, capable owner engagement. When that engagement is absent or unfocused, the delivery method does not save the project.

Occupation Readiness Is Its Own Project

PCH's commissioning and transition team described the project as being in its fifth year of development when they came on. That is consistent with the pattern across complex hospital projects: activation and occupation readiness require a dedicated organisation working alongside construction for months or years before first patient. Hospital schedules that treat activation as a closeout activity rather than a parallel work stream will underdeliver on it.

Closing Observation

Perth Children's Hospital is not a story of a bad contractor, a bad client, or a bad design. The design is well-regarded. The contractor is one of Australia's largest and most experienced. The client is a sophisticated state government with extensive major-project experience. And still, the project lost nearly three years and hundreds of millions of dollars in dispute between when it was scheduled to finish and when the last paediatric patient walked through the door.

The reason is the reason that drives delay on most complex hospital projects: hospital scheduling complexity is distributed across regulatory frameworks, specialty systems, supply chain exposure, compliance documentation, ICT integration, water safety, infection prevention commissioning, and operational readiness - and no single participant's discipline can absorb failures in all of them. Every one of the major issues at PCH – fire doors, cladding, water, ICT - corresponds to a specific structural risk that hospital

schedules carry, and the failure mode at PCH was that these risks materialised in a sequence that the delivery structure could not recover from in real time.

For owners and contractors delivering hospital projects today, PCH is most usefully read not as a cautionary tale about Western Australia, John Holland, or the MC model, but as a demonstration of what a hospital schedule has to survive to be delivered on time. The structural risks are real. They materialise on most projects, not just this one. The projects that land on schedule are the projects where the team sees the full risk picture from the start and builds the schedule to absorb it. The projects that do not tend to look, in hindsight, a lot like Perth Children's Hospital.

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Note: Specific settlement terms are confidential. Schedule durations and cost figures are drawn from public reporting and the Public Accounts Committee findings. Practitioners citing this case in formal work should consult the primary sources directly.