James Dowzard

Systems Engineer

John Holland · Sydney

Systems engineer with nine years at John Holland on rail infrastructure projects, covering requirements, interfaces, hazard analysis, RAM and safety assurance from design through to handover. Currently Systemwide Strategies Manager on Sydney Metro West Linewide. I also write the software my teams use: data pipelines, project dashboards, API clients for the project systems, and AI agents built on them.

CAPABILITIES

Systems engineering and assurance

- Technical interface management across multi-party rail projects
- Requirements management and traceability (Relatics, IBM DOORS)
- Safety cases and assurance arguments (EN 50126, GSN, SFAIRP)
- Hazard logs, safety risk assessment, FMEA and FRACAS
- RAM modelling and apportionment
- Configuration and change control, departures and design assurance

Software, data and AI

- Python, SQL, TypeScript, Svelte, Flask and FastAPI
- Databricks: dbt pipelines, Unity Catalog, Apps and Lakebase
- API clients and MCP servers for document control and engineering systems
- AI agents and LLM tooling for document review, drafting and data entry
- Power BI and Power Platform
- Machine learning for requirements classification

EXPERIENCE

Jul 2026 – now

Systemwide Strategies Manager

Sydney Metro West Linewide · John Holland

Linewide is the John Holland package for the systems that run the length of Sydney Metro West, from Westmead to Hunter Street: track, 25 kV traction power, tunnel ventilation, earthing and bonding, signalling and communications infrastructure, and SCADA.

- Accountable for the Linewide plans and working groups for the systemwide disciplines: security, fire and life safety, noise and vibration, transit space, EMC, earthing and bonding, track, wheel-rail interface, pantograph and overhead line, and survey.
- Run the systemwide working groups with Sydney Metro, the station contractors and the trains, systems, operations and maintenance contractor.
- Review design packages against the systemwide requirements, and track interface issues through to close-out.

2025 – 2026

Systems Engineer, and Acting Stations & Third Party Interface Manager

Sydney Metro West Linewide · John Holland

- Managed technical interfaces with Sydney Metro, the station contractors and the trains, systems, operations and maintenance contractor.
- Coordinated the weekly interface action reconciliation with the operations contractor across eight disciplines, including signalling, communications, rolling stock, depots and platform screen doors.
- Ran the critical information exchange and design exchange cycle on design deliverables, with party-to-party traceability.

- Prepared Revision A of the Construction Interface Management Plan.
- Built the project's data platform and dashboards (see Software below).

2021 – 2025

Systems Assurance Engineer, then Senior Systems & Assurance Engineer

Rail Engineering & Innovation, and AI & Automation team · John Holland

Systems engineering and digital engineering support to rail projects across the business, including Sydney Metro Northwest, Canberra Light Rail, Gold Coast Light Rail Stage 3, Melbourne Airport Rail, Sydney Gateway, M7–M12 and the M5 West tunnel upgrade.

- Safety assurance and systems engineer on Gold Coast Light Rail Stage 3 (2021–2023): requirements allocation and verification matrices, the project safety hazard log, detailed hazard analysis workshops and the GSN safety argument.
- Set up and co-authored the first safety assurance statement for the Gold Coast Light Rail Stage 3 depot works.
- Co-led concept-stage hazard reviews for Canberra Light Rail with the builder and operator (December 2022 and February 2023), and took part in risk and opportunity reviews on the Canberra Light Rail Depot Modification project.
- Co-wrote the automation capability and resourcing options paper (June 2023) that set out how the business would resource systems engineering automation.
- Led Safety in Design workshops on the M5 West tunnel upgrade and M7–M12, covering hazard identification, control selection and the preliminary hazard log.
- Co-authored the operational safety case addendum and safety and systems assurance plan addendum for Canberra Light Rail operations.
- Led an initiative to classify tender requirements with machine learning, from the business case (2022) to working prototypes.
- Developed a GIS hazard workflow for Melbourne Airport Rail that updated IBM DOORS Next automatically.

2020 – 2023

System Safety Engineer

Cross Yarra Partnership, Metro Tunnel, Melbourne · John Holland

- Wrote the system hazard analysis report.
- Built the safety control verification matrix used to confirm controls were in place before dynamic testing.
- Reviewed design changes and RAM FMECAs for safety impact and brought the results into the hazard log.
- Automated the hazard log reporting and built a dashboard of control progress.

2020 – 2021

Systems Assurance Engineer

Canberra Light Rail, Sandford Street stop · John Holland

- Wrote the systems assurance approach for adding a stop to the operating network, scaled to the risk of a change to an existing system under EN 50126.
- Agreed the assurance scope with the operator, the construction contractor and the client, and produced the handover safety assurance report addendum.
- Wrote the GSN safety argument for the system change.

2019 – 2020

Systems Assurance Engineer

New Intercity Fleet Maintenance Facility, Kangy Angy · John Holland

- Managed the safety assurance content of the Gate 4 (ready to test) and Gate 5 (ready for handover) submissions.
- Owned the requirements allocation matrix and the hazard log through to handover, and co-authored the Safety Assurance Report for Completion.
- Assessed derailer operation and wheel lathe road bonding, and transferred residual risks to the operator, maintainer and council.
- Moved the hazard log from Excel to IBM DOORS, the first John Holland project to manage hazards in DOORS.

- Built the business case for a blockchain-based digital procurement platform, presented to the TEK leadership team in November 2019, and worked on a research proposal with RMIT.

2017 — 2019

Graduate Engineer

Sydney Metro Northwest · John Holland

- Reviewed the operational safety hazard register for traceability and did the residual risk analysis for every hazard in it.
- Supported the Design Stage 3 RAM report and operational RAM model.
- Owned intrusion management: stakeholder consultation, design options, the intruder risk framework and the Intrusion Management Safety Report.
- Wrote sections of the engineering safety case for first passenger services, and worked alarm monitoring shifts in the operations control centre in the first weeks of service.

SOFTWARE

TOOL	WHAT IT DOES	BUILT WITH	YEAR
Project data platform	Brings engineering, document and schedule data into one model for reporting.	Databricks, dbt, Unity Catalog	2025
Project dashboards	Dashboards and data tools for a project team, with group-based permissions.	Flask, Databricks Apps	2026
Agent connectors	Python clients for document control and engineering systems, exposed to AI agents as MCP servers.	Python, REST, MCP	2026
System architecture model	A system breakdown and interface matrix, kept as a model in git.	SysML v2, Python	2026
Commercial forecasting app	Project cost forecasts, with purchase order data synced in.	FastAPI, Svelte, Lakebase	2026
Team tools portal	One app hosting a team's internal tools, with group-based access.	Flask, Databricks	2025
Plant billing	Fuel, e-tag and plant hire billing.	Python, Flask, Databricks	2025
Personal AI agent setup	Skills, hooks and multi-agent workflows for Claude Code that run most of my day-to-day project admin.	Claude Code, Python	2025

EDUCATION AND TOOLS

Bachelor of Engineering (Mechatronic), Honours Class 1
UNSW Sydney, 2018

Bachelor of Science (Physical Science)
UNSW Sydney, 2018

Chartered Professional Engineer (CPEng), Systems Engineering
Engineers Australia

International Engineering Safety Management (iESM)
Completed

Rail Industry Worker card
Current

Requirements and assurance
IBM DOORS and DOORS Next, Relatics

Document control
Aconex, TeamBinder, ProjectWise, SharePoint, Bluebeam

Data
Databricks, Power BI, Power Platform, Microsoft Fabric

GIS
ArcGIS Pro, QGIS