2023 FELLOWSHIP PROJECT

Group 4 - Queensland

Topic

What is one technical innovation that we can introduce to our industry that will help us achieve RA policy objectives and open up opportunities for new streams of talent in our workforce.

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EXECUTIVE SUMMARY

The infrastructure industry in Australia has recently experienced a significant period of growth and investment. Major public infrastructure works have increased by $15 billion since 2021, and the industry is projected to have a combined value of $647 billion from FY2021/22 through FY 2025/26.

At the same time, along with many other industries, there is a shortage in critical skills and resources to deliver these works.

While struggling to address the shortfall in resources, the infrastructure industry also continues to lose talent, knowledge, and experience to other industries. Although there is no single cause, the lack of work life balance and flexible working arrangements is often a driving force. While education, upskilling and immigration may help address some of the shortages, we need to find a way to stop this loss of existing skills and also attract new streams of talent into the workforce.

For any industry facing such resource challenges, there are three primary options: recruiting talent from overseas; recruiting talent from other industries; and increasing the productivity of the existing workforce. There are hurdles and negative externalities associated with each of these options including for international recruitment, the reliance on federal immigration policies, and for recruiting from other industries, the matter of then creating equal resource challenges in other critical industries. Increasing the productivity of the existing workforce however, whilst challenging, does not rely external policy change nor does it exacerbate the issue within other industries.

The Hub of Knowledge Intelligence Share (HOKIS) was designed to provide the infrastructure industry a technological solution to its resource challenges. HOKIS is powered by artificial intelligence, continually increasing and enhancing its knowledge and power, enabling seamless and effective job-sharing.

HOKIS aims to demonstrates that an employee’s value is not determined by the hours that the individual is able to commit, but by the capability they contribute to the team's success. The HOKIS solution enables greater flexibility for those already working in the industry – whether they are returning to work after maternity or paternity leave, transitioning to retirement but wanting to remain engaged part-time, undertaking caregiving duties, or simply seeking greater work-life balance – and also provides a benefit of increasing the appeal of the industry to potential new entrants.

This paper provides a comprehensive overview of the HOKIS solution; the issue it seeks to address, how the solution works, scenarios / roles whereby the HOKIS solution could be applied, commercial viability testimonials, a policy for implementation, additional considerations, and case studies.

1.0 THE ISSUE

The consistent capability and delivery of a highly performing team can be threatened when individual team members are unable to continue with the workhours of a full-time position. Be it forced or a chosen lifestyle choice, the loss of that individual's specific knowledge within the team typically has a substantial impact. Access to established capability and valuable knowledge transfer to developing staff is lost when trained staff are forced into an early or temporary retirement.

There are many lifestyle circumstances that lead to employees finding themselves in situations whereby they are unable to sustain the high level, and high performing roles that they had been successfully fulfilling on a full-time basis. Maintaining relevance and influence as a critical member of any team is difficult when impact opportunity is reduced, as is the case of part-time or limited hours worked by the individual.

Senior and key staff are seldom provided with an avenue to continue in their role working reduced hours, as their pivotal position inherently has the expectation of extended hours with a high level of visibility. In the absence of 100% contribution to the team, staff often leave their area of expertise pursuing operational roles where flexible and part-time hours are better supported.

This truly is an intergenerational issue. There is an aging workforce retiring, or dealing with care challenges of loved ones, as well as todays expectation of co-parenting along with a generation focused on a healthy work/life balance. The success of job-sharing is more relevant now than ever before. Most employee conditions reflect today's expectations and good employers will attract staff with proven capability if they are able to support the flexibility needs of the employee.

A platform that facilitates knowledge sharing and maintains project development will support high level professionals and allow them to remain or re-join a motivated team in a capacity that complements their lifestyle.

1.1 Challenges in the Infrastructure Industry

Careers in the infrastructure industry are often associated with long working hours, high stress situations, poor work life balance and inflexible employers.

A study commissioned by the Construction Industry Culture conducted by Swinburne University identified the following key statistics:

- 64% of respondents work more than 50 hours per week
- 59% are unsatisfied with their work life balance
- 46% are experiencing burn-out
- Twice the national suicide rate.

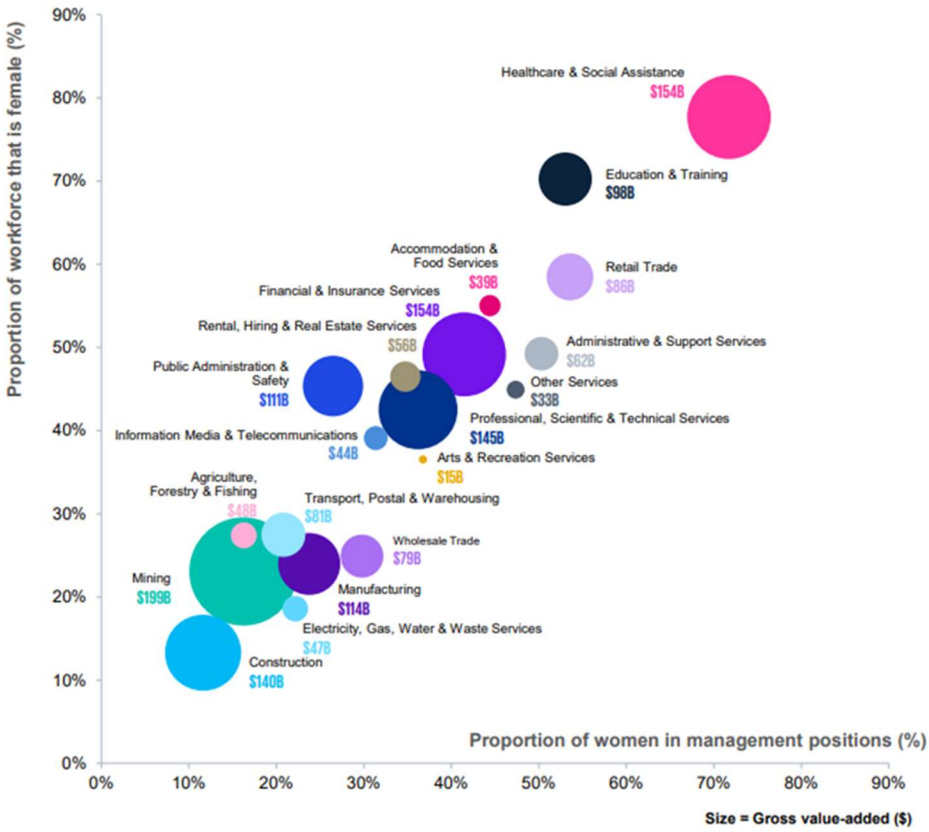
This is resulting in a vicious cycle of those in the industry leaving prematurely, and the working conditions making it a challenging to attract new talent to replace those leaving. The continual growth in volume of work and record low unemployment further exacerbates the problem.

A review of the cohort currently engaged on infrastructure projects provides a useful way to understand how the challenging conditions manifest themselves in the composition of staff. Construction is the number one male dominated industry with a female participation rate of only 12%, and less than 2% for site-based roles. The average age of a civil engineer is only 35. This is an even more startling statistic when you consider the average age of a civil engineering graduate is 23.

This is a stark contrast to the Australian workplace in general where, as an average, across all industries women make up 48% of workers and the average age of a worker in Australia is 44.

Industries where female workers are the dominant participants indicate that the part time workforce is comprised of 70% women and only 30% men. These industries include healthcare and social assistance, education and training, accommodation and food services, and retail trade industries.

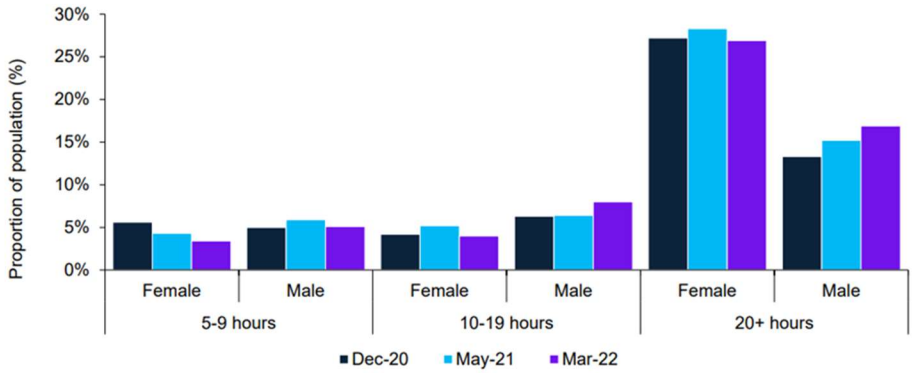
These industries generally provide more flexible working arrangements and greater part-time options, record a lower number of average hours worked, and more readily allow workers to re-engage with employment after a period of absence due to taking careers leave to have children or look after sick relatives.



Source: KPMG analysis of the Household, Income and Labour Dynamics in Australia Survey, Release 20, Wave 20 (HILDA Survey); WGEA Workplace Profile and Management Statistics data (2020)

Figure 1: Female workforce v management positions

The prevailing expectation of society remains that women are primarily responsible for unpaid work activities such as rearing children, caring for sick relatives and completing household chores (as illustrated in Figure 2). On average, females spent four hours and 31 minutes a day doing unpaid work activities. This is one hour per day more than the average male. Women are also significantly more likely to taking a period of extended absence after the birth of a child than men. This period of absence, coupled with the extended working hours and added tasks required at home, quite often drives women away from the construction industry after the birth of their first child.



Source: ABS Household Impacts of COVID-19 Survey, March 2022

Figure 2: Unpaid labour males vs females

For the infrastructure industry to increase worker participation, it should first take steps to address the underrepresented group – women. By analysing industries with greater female participation rate, it is obvious that some of the key elements that make these industries attractive are flexible working arrangements, reduced hours and the ability to greatly reduce participation for extended periods of time to allow the individual to rear a young child or care for a sick relative.

Job sharing is a great way to remove the many of the barriers presented by the industry given it provides a high degree of flexibility to the hours worked. The NSW government has championed job sharing in the public service and based on a survey undertaken in 2019, 88% of the participants in this scheme were females, however with the right structure and support, similar schemes could extend to males, those seeking more work-life balance, or those transitioning out of the workforce.

Limitations

Job sharing on infrastructure projects however can be extremely unproductive given the challenges associated with effectively sharing knowledge given the dynamic nature of most roles within the industry. To date, those participating in job sharing typically pass on information between each other by using checklists, handover notes and holding regular informal catch-up sessions. This is a time-consuming process and if undertaken without a high degree of structure can result in the inadequate transfer of information. This style of working has not had any meaningful technical innovations to improve efficiency. This lack of efficiency is a key barrier to the implementation of job sharing within the infrastructure industry.

2.0 OUR SOLUTION

Hokis is an artificial intelligence-led software program which facilitates more efficient and effective job-sharing arrangements, allowing them to become more commonplace within the infrastructure industry and address the resource gap by increasing utilisation and creating more appeal.

Hokis will demonstrate to the industry and beyond, that job-sharing is no longer burdensome; and that it is in fact the way of the future and an effective, efficient, and valuable outcome can be achieved from job sharing arrangements.

The software will focus on;

- communications management
- action ownership and management
- efficient access to data and records
- transparency for users and stakeholders such as managers or team members.

2.1 Existing Solutions

There are multiple platforms currently within the workplace that are focussed on improving collaboration. Examples of these platforms are Mural, Slack, Confluence and Asana. These pieces of software generally provide the following features:

- Multiple methods of communication such as instant messaging, audio/ video calls, sound recordings etc
- Shared 'whiteboards' where users can collaborate in the one location
- Virtual post-it reminders/ task notes
- A structured common filing structure.

This software is effective in promoting collaboration within teams because it increases the level of interaction between participants. Active collaboration is particularly important when teams are physically separated to ensure efficiencies are achieved.

Job sharing participants are not only separated physically, but they are also separated in time. Many of the active collaboration features present in the software mentioned above are of little use if the participants cannot interact with each other in real time. These platforms also do little to track the progress of projects given they do not attempt to understand the sequence of sub-tasks required to complete the overall project.

There are some platforms targeted at improving collaboration within the infrastructure sector. These are explored below:

Procor – provides a shared working environment to ensure users have access to the latest set of data such as drawings/ specification/ construction program. It also stores and tracks some data such as costs and progress to allow other users to understand the status of the project.

- Briq – targeted toward cost tracking and improving financial visibility throughout the project team.
- Touchplan – provides an environment for users to update and maintain a program that is more interactive than other planning software such as P6.

- SmartUse – another shared working environment to ensure all team members are using common data.

These collaboration tools are focussed on providing a common environment for users to improve knowledge share across functions.

Based upon the research conducted, it appears that there is no software or platform focussed on improving collaboration between two or more people undertaking the one role.

Facilitating effective job sharing poses its own set of challenges. For job sharing to be effective, the key is to ensure each participant can quickly understand which tasks have been completed, which tasks are outstanding, and be advised of any new relevant information that has come to hand during their period of absence.

These set of challenges differ significantly from the challenges associated with geographically separated teams, and therefore requires a different solution.

2.2 The Gap

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Those who job-share currently typically use fairly basic tools to aid collaboration, such as a common filing structure (i.e. SharePoint, shared drive etc) and hand-over notes. These rudimentary methods greatly decrease the efficiency of job sharers given a significant portion of their working day is spent either writing/ reviewing hand-over notes or searching the filing structure to check the status of particular tasks.

Worker efficiency is further eroded if one or both job sharers undertake their role in an un-structured way whereby they continually change the order that tasks are completed in or partially complete tasks before focusing their attention elsewhere. These traits are typical for people who work in senior/ managerial positions as their roles are dynamic, heavily impacted by external factors and have continually shifting priorities. It is these positions that have a very low uptake of job sharing given the added level of complexity that this way of working presents.

2.3 The HOKIS Difference

For job sharing to become effective, it must allow the participants to work intuitively with each other even though they are separated in time. Further, it must allow the job sharers to complete their job without the need to rely upon hand-over notes or the continual checking of potentially partially complete tasks. To facilitate this, the enabling technology must complete two key tasks:

1. understand the structure and sub-tasks required to complete the role,
2. provide an interface whereby the status of sub-tasks is quickly and effectively communicated each of the job-sharers.

2.3.1 Understanding the role

For this job-sharing enabling technology to be effective, it must understand the role so it can be intuitive and track the progress of sub-tasks. As noted above tracking the progress of tasks is currently completed by making lists and hand-over notes by the job-sharers and is a source of a major inefficiency.

To understand the role the technology requires a period of 'job shadowing' whereby it 'observes' a job sharer performing their role for a period of time. During this observation/ calibration period, it gathers data from a multitude of inputs such as:

- Voice and word recognition from attending meetings
- Tracking of correspondence such as emails, MS Teams messages, memo's, letters, electronic document management systems (EDMS) etc
- Requirements nominated within the Project Management Plan suite of documents
- Scheduling requirements from the P6/ MS Project program, three-week look ahead, planning whiteboards
- Technical documents such as Australian Standards, Road Authority Specifications, Principal Project Requirements etc.

Concurrently with capturing data inputs, the technology will also capture the corresponding outputs of the role. Outputs obviously vary significantly depending on the position.

2.3.1.1 Example of job-sharing position Project Engineer

We have used the typical deliverables of a Project Engineer position to illustrate the mechanics of the "Hokis" and how it will facilitate job-sharing.

Position Outputs:

- Developing and completing quality documentation such as ITP's
- Procuring items associated with the permanent and temporary works
- Generating work method statements
- Cost review and forecasting
- Supporting industry best practice through implementing project learnings
- Driving intended corporate culture.

The technology will use data mining and observe patterns between the inputs and outputs. Data mining is the process of extracting and discovering patterns in large data sets involving methods at the intersection of machine learning, statistics, and database systems

During this stage, the technology learns information about the role such as:

- What tasks need to be completed
- The sequence, if applicable, of completing these tasks
- External interfaces/ inputs
- Durations of tasks
- Outputs from the individual.

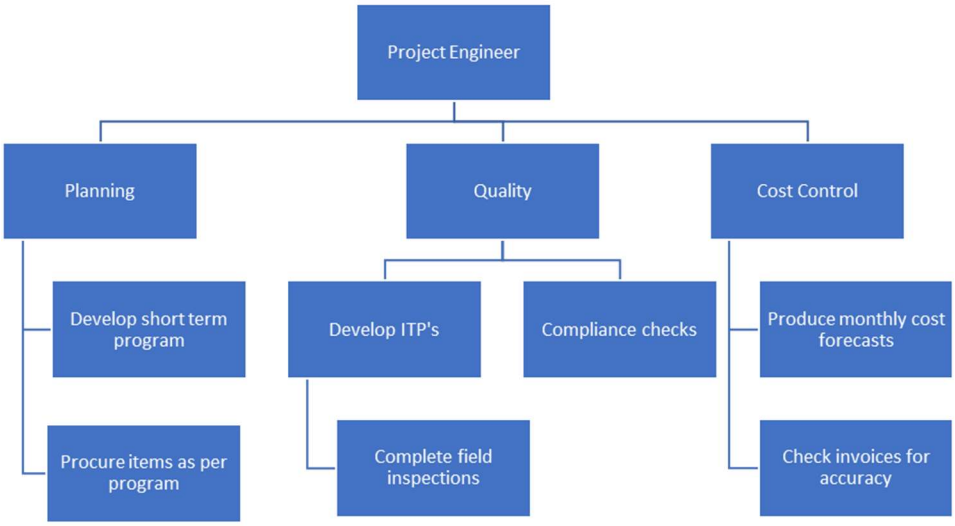
The intent is to learn what outputs are required by the individual, when these tasks can be completed, and in what order.

Activity Tracking

Once the technology has understood the role of the individual, the next and final phase of calibration process is to track the tasks completed by the individual and categorise them.

Each job position will have a slightly different way of structuring tasks and workflow. Therefore, this step will require some manual input from the observed worker to allow an agreed Work Breakdown Structure (WBS) to be developed.

Below is a level four example WBS for a Project Engineer. Note, only select tasks have been shown for clarity purposes.



Throughout the activity tracking process, the individual will need to conduct checks as to how the technology has categorised individual tasks. It will be necessary at times to re-categorise items to ensure they are logged against the agreed element of the WBS. This process will be 'learned' by the technology the accuracy of its categorisation will improve over time.

Task tracking and display

As identified earlier, the aim of this technology isn't to complete tasks on behalf of the individual. The purpose is to track progress and communicate the status of tasks via an easy-to-understand dashboard. This eliminates the time consuming and inefficient task of constantly writing and checking handover notes and action lists.

During the calibration process the device has learned the following:

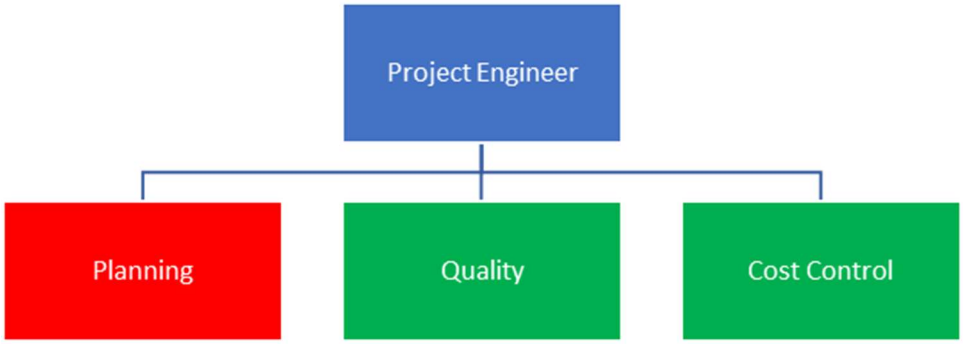
1. What are the required outputs of the job,
2. What sequence the outputs are completed in.

Now that the device understands these two key fundamental elements of the job, it is able to gather this data and provide a simple tracking dashboard. The dashboard is based upon the WBS established during the calibration process. Status of tasks are identified via the following 'traffic light' system:

- Green – task(s) have been completed. No further action required in the short term
- Yellow – task(s) are partially completed. Further work is required in the short term to prevent 'loss'
- Red – task(s) are outstanding. Further work is required immediately and a 'loss' is anticipated.

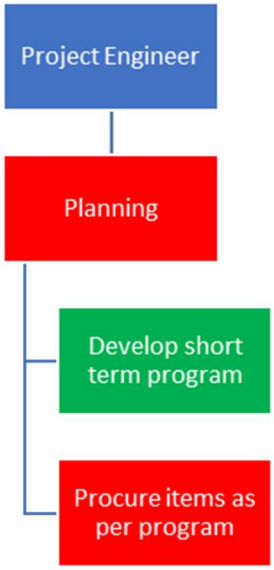
Note, a 'loss' is defined as an undesirable outcome such as late procurement of element that will cause a delay to the project. The initial dashboard display will start at a 'Level Two' thereby providing a high-level snapshot of the overall status of the tasks. The sequence below outlines an example of how the display can be interrogated to quickly by a Project Engineer to provide a status update of a task to a job-sharer.

Step 1, Level Two display:



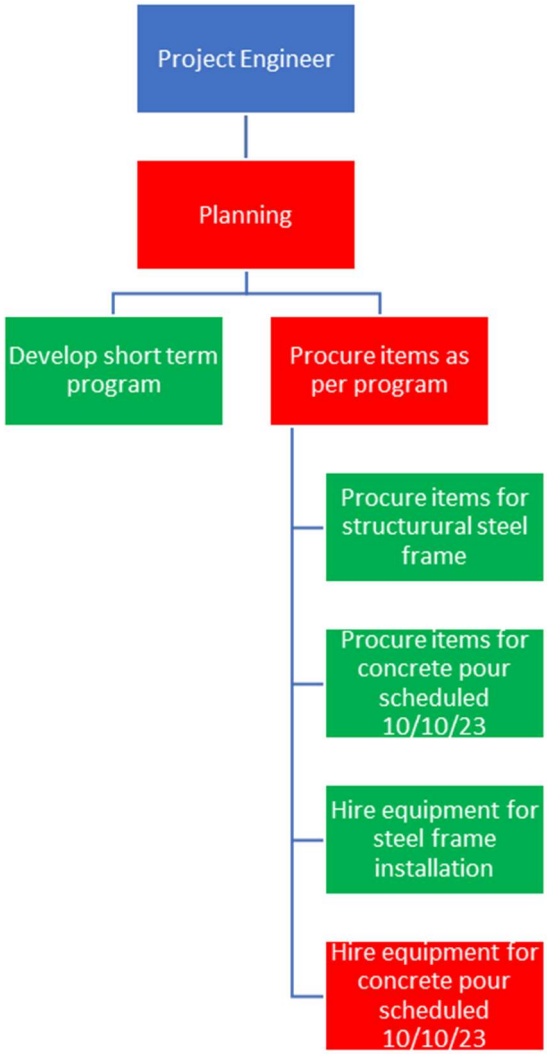
From this dashboard, it is apparent that there is a task outstanding within ‘planning’ that needs to be resolved immediately. ‘Quality’ and ‘Cost Control’ have nil outstanding tasks for the near term. The Project Engineer then ‘clicks’ on the ‘Planning’ page

Step 2, Level Three display:



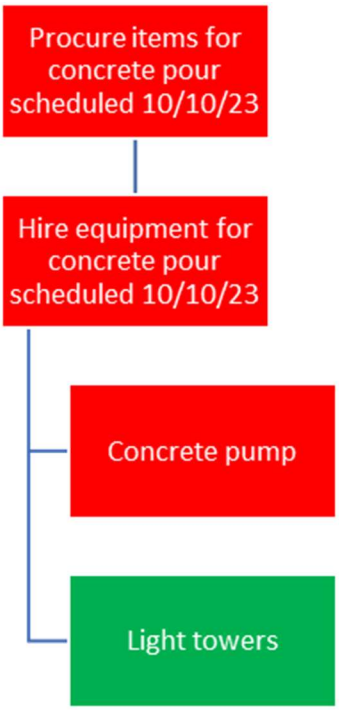
From this dashboard, it is apparent that there is a task outstanding within ‘procure items as per program’ that needs to be resolved immediately. This is then interrogated.

Step 3, Level Four display:



Step 4, Level Five display

Note: levels 1, 2 and 3 have been removed for clarity



Therefore, it is apparent that the outstanding item that needs immediate attention is the ordering of a concrete pump for a concrete pour scheduled on the 10th of October 2023. The job sharer has also been able to learn this information with only three clicks on the interactive display.

This simple and effective way of tracking and displaying the status of tasks allows each job sharer to meaningfully fulfill the requirements of a complex role free from the inefficiencies associated with writing endless lists and handover notes.

3.0 VIABILITY

In developing the Hokis solution, the team conducted thorough market engagement seeking iterative feedback and surety that the solution would be commercially viable upon launch. The comments included in Table 1 below, demonstrate that there is sufficient market appetite for the Hokis solution.

Table 1: Commercial viability survey

Contact	Company	Discussion/Comment
Ross Hodgman - A/ Regional Director - Northern	TMR Program Delivery and Operations	As A/RD I support flexible working arrangements. Our government employment conditions can be the primary motivation for talented contributors to join the public service and be a vital part of our team. To meet the complications of our changing workforce and continue to be value for money is a challenge that I would like to attempt to solve with this apparatus.
Wesley Walden - Managing Partner - Director	McKinsey and Associates	Yes, we have many talented stakeholders that we would like to include in our consultations. This apparatus may allow our company to expand the contribution set and ultimately solve some of the complications that present.
Janna De-Groot - Senior Consultant/Advisor	Climate Works	I have worked within a highly performing team and within the limits of part-time hours, this platform would have ensured that my delivery was consistently relevant and critical.
Sally Stannard A/Director General	Transport and Main Roads	This is a wonderful concept that supports our current expectation of a work/life balance. TMR is currently unpacking a knowledge share project, and this would be most beneficial. TMR needs to look at practices that maintain our long-established capability wherever possible.
Rob Storey Director, Pre-Contracts	Inland Rail	The desire and need for more flexible working arrangements is ever increasing at Inland Rail and across the industry. We lose a lot of highly talented individuals through maternity/paternity or other caregiving demands. The Hokis technology sounds like a highly valuable and well thought out product that could help facilitate the return of some of our underutilised, high-performing employees.

Ellen Connor, CFO	FSC Group	There are people at FSC (myself included) who definitely understand that people who perform part time, job share or flexible roles can be just as valuable (if not more valuable) than those in traditional full time roles. However, I do not think that this is a majority held view – there is weight of history and industry expectation which assumes part time is less valuable. A software like this would assist two people to seamlessly perform one role and help reverse the negative association with part time roles.

Further evidence of viability and market interest is provided in Appendix B.

4.0 IMPLEMENTATION POLICY

The following section outlines a policy to implement Hokis. The policy's intent is to address;

1. Intended use of Hokis
2. Obligations and responsibilities of job sharers, managers and stakeholders while using Hokis
3. Data Management including records,
4. Training and support provided
5. Trial period and job sharing evaluation
6. Review process

This section aims to outline how a positive job-sharing role outcome can be achieved using HOKIS, how it is implemented, the responsibilities of the users, the support provided and limitations of the policy.

4.1 POLICY

4.1.1 APPLICATION

This policy applies to all employees including job-sharing employees, direct reports, managers and all other employees.

The intent of this process is to support the job-sharing process and to ensure the shared role maintains ownership, quality and output typically expected from any single role.

4.1.2 GOALS & OUTCOMES

Our business believes that an employee's worth is not determined by the hours that the individual is able to commit, but by the value they contribute to the team and the teams project success.

Hokis will support job sharing roles by providing a transparent working environment to ensure a positive outcome for a shared role for both the job-sharers and interfacing parties such as direct reports.

Note: the process to apply for a job-sharing role, including partner selection, is documented separately. This policy is focused on the use of Hokis to support job-sharing.

4.1.3 RESPONSIBILITIES

Job Sharing Employees:

- Respect your role and the other person's role
- Ensure a sense of ownership and accountability is fostered in the shared role
- Seeks opportunities to optimise the shared role
- Consider the skills, strengths, and work styles of your partner and develop a working arrangement to find a balance in your shared roles

- Implement Hokis for all communications and task tracking/ sharing to maximise the effectiveness of the shared role.

Managers:

- Encourage the use of Hokis by the job sharers
- Hold the job sharers accountable for the records in Hokis
- Access records in a positive and collaborative manner
- Track key performance measures to ensure the role and Hokis are working effectively
- Provide feedback and support modifications to the job sharing role as required

Direct reports and other Employees:

- Respect and support the job shared role
- Access records in a positive and collaborative manner

The Business:

- Respect and support the job shared role
- Co-ordinate employee job sharing roles and participants
- Provide adequate training to support the shared role and the effective implementation of Hokis

4.1.4 TRAINING & DEVELOPMENT

Prior to commencing a shared role and the use of Hokis, the business will ensure the following;

- Provide training and onboarding sessions for job-sharing partners to familiarize them with the software.
- Ensure they understand how to use the tools for task management, communication, and document sharing.

4.1.5 IMPLEMENTATION

Hokis access

Hokis must be downloaded to all devices job-shares utilise to complete their roles, including;

- Laptops
- Mobiles phones
- Tablets
- Shared devices such as meeting room IT equipment.

Interfacing employees such as direct reports, team members and managers should also download Hokis relevant devices that will assist with data transparency and sharing with the shared role.

Job sharers must use Hokis in their role on a day-to-day basis and to perform the following tasks:

- To create tasks and trackprogress.
- Set deadlines and priorities for tasks and projects.
- Create a shared calendar and schedule working times
- Schedule meetings
- Create meeting records
- Issue email correspondence
- Create telephone conversation records
- Document creation and collaboration.

Hokis will ensure that both partners can easily access and maintain awareness of all tasks, progress and records.

4.1.6 RECORDS

The records created will be accessible by;

- Job sharing employees
- Respective Managers
- Other employees, approved by Manager
- Other stakeholder access can only be granted by business Executive General Managers.

Approval levels

Job shares can assign, subject to manager approval, access levels to certain records, that may be deemed to contain "sensitive information". Users can assign access levels to records that contain sensitive information.

For example, actions documented from a performance review of a direct report of the job-sharers would be accessible to the job-sharers and managers but not to other direct reports. Hokis allows the selection of multiple access levels as assigned by the job sharers and approved by their manager.

Data Storage Duration

Records will be stored for a minimum of 12 months and a maximum of 5 years.

The maximum time periods can be reduced to suit a project time line and subject to General Manager approval.

Privacy Settings Customisation:

- Develop a range of privacy settings that users can customise based on their preferences and the nature of their interactions on the platform.
- For instance, users might want different levels of privacy for networking, role sharing, and team collaborative work.

Secure Communication Channels:

- Integrate end-to-end encrypted messaging features that prevent unauthorised access to conversations and attachments.
- Implement secure file-sharing capabilities that allow users to exchange work-related documents without compromising data security.

4.1.7 LIMITATIONS AND EXCLUSIONS

The intent of this process is to support the Role Sharing process and to ensure the shared role maintains ownership, quality and output typically expected from any single role.

The transparency and records created through this policy are not intended to and cannot be used for the following;

- Evidence for any contractual requirement or claim, including design and quality requirements
- Monitor employee's working hours
- Monitor behaviours including improper and unethical behaviour, fraudulent activity, unlawful, corrupt or irregular practices or the misuse of company funds or assets
- Improper or misleading accounting or financial reporting practices
- Be used to support performance reviews, either positive or negative.

4.1.8 REVIEW PROCESS

As part of the implementation of a job shared role and the use of Hokis, the following review will be implemented:

- All new job shared role will be subject to a 6-month trial period
- Managers will continuously seek feedback from all parties involved to identify areas for improvement.
- Managers will conduct periodic reviews of the job-sharing arrangement to ensure it continues to meet its intended goals and benefits. These will occur no less than 2 times within the first 6-month period and bi-annual thereafter.
- Managers will collect feedback from job-sharing partners about the effectiveness of the software tools and workflows.
- Job sharers should engage in a continues feedback process to ensure the success of the job shared role
- Managers and job sharers shall make adjustments and improvements based on feedback to enhance the job-sharing experience.
- Periodically evaluate the performance of the software tools in supporting job sharing.
- Consider whether the software is meeting the needs of the arrangement and whether any updates or changes are required.

5.0 CONSIDERATIONS

In addition to the Implementation Policy, a range of other considerations must be made when this product is implemented. The two key areas for consideration are described below.

6.0 Confidentiality and Data Privacy

Items to be considered during the development and implementation of the platform to ensure confidentiality and data privacy:

2. **Privacy-Centric Platform Design:**
    - Implement end-to-end encryption for all user communications, ensuring that only the intended recipients can access the messages.
3. **User Control Over Data Sharing:**
    - Offer a user-friendly interface that allows users to easily manage their profile information and control what details are visible to others.
    - Provide checkboxes or toggles for users to select what information they want to share with work share colleague and manager.
4. **Data Minimisation for Profiles:**
    - Collect only essential information during the profile creation process. For example, for work-sharing purposes, you might only require a user's skills, experience, and availability.
5. **Opt-In Sharing:**
    - Require explicit consent from users before sharing any personal or sensitive information with other platform users.
    - When users are about to engage in collaborative projects or part-time work, prompt them to review and approve data sharing settings.
6. **Privacy Settings Customisation:**
    - Develop a range of privacy settings that users can customise based on their preferences and the nature of their interactions on the platform.
    - For instance, users might want different levels of privacy for networking, role sharing, and team collaborative work.
7. **Secure Communication Channels:**
    - Integrate end-to-end encrypted messaging features that prevent unauthorised access to conversations and attachments.
    - Implement secure file-sharing capabilities that allow users to exchange work-related documents without compromising data security.
8. **Role-Based Access Control:**
    - Define different user roles (e.g., collaborator, manager, role share) and assign specific permissions and access levels based on these roles.
    - Ensure that users only have access to information and functionalities relevant to their roles.
9. **Secure File Sharing:**
    - Implement encryption for files shared on the platform, both in transit and when saved.
    - Allow users to set access controls for shared files, specifying who can view, edit, or download them.

10. **Transparent Data Usage Policies:**
    - Create a clear and concise data usage policy that explains how user data is collected, processed, stored, and shared within the platform.
    - Include examples of data usage scenarios to help users understand how their information will be used.
11. **Regular Security Audits:**
    - Conduct routine security audits to identify vulnerabilities and weaknesses in the platform's infrastructure and code.
    - Address any identified issues promptly to maintain a robust security system.
12. **Data Portability and Deletion:**
    - Allow users to export their data in a commonly used format for their own records or for migration to other platforms or use within the business.
    - Provide a straightforward process for, with the approval of management, user be able to deactivate accounts and associated data from the platform.
13. **Consistent Privacy Training**
    - Develop interactive tutorials or videos that educate users about best practices for maintaining privacy and security on the platform.
    - Cover topics such as setting strong passwords and managing privacy settings.
14. **Prompt Incident Response:**
    - Develop a detailed incident response plan that outlines steps to take in case of a privacy or security incident.
    - Establish communication protocols for notifying affected users and relevant support systems.
15. **Transparency Reports:**
    - Publish regular transparency reports that summarise the platform's privacy and security efforts.
    - Include information about any data breaches, actions taken to mitigate risks, and future plans for enhancing privacy.

5.1 Governance

Data governance is a crucial aspect of the management of data for this technology and within an organisation. Strong data governance strategies with the use of this new software both during implementation, and use, will be key. Strong data governance will ensure improvements in:

- Data quality
- Data security
- Data integrity

This is essential to the performance of the platform as poor data entry will result in poor outcomes from the technology.

Correct procedures around the following items will ensure data governance:

- Data collection

- Data storage
- Data processing
- Data sharing in a controlled way to:
    - Protect data privacy
    - Maintain data quality
    - Support compliance with relevant regulations

Clearly defined data ownership and assigning responsibilities for data compliance, quality and privacy within the organisation and through the development of the technology will be required.

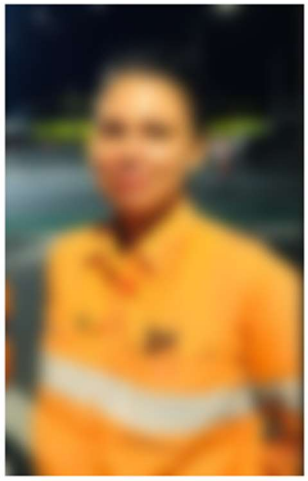
Consideration of this governance framework will form a key part of the development and implementation of this platform.

8.0 CASE STUDIES

We are confident that HOKIS is an effective solution to address the resource constraints concerns shared across the infrastructure industry, by increasing productivity and utilising latent capacity in existing employees and making the industry more appealing to new entrants.

Below are a series of case studies whereby HOKIS' pilot program was of interest and would provide value.

CASE STUDY 1. KRYSTAL



Krystal – Senior Cultural Heritage officer 29 YO

RE: Krystal is expecting her first child and would like to job share with a colleague.

Krystal is the Cultural Heritage lead within a project team delivering a major infrastructure project through 16km of "Greenfield" alignment which navigates through Aboriginal recognised sites that are protected under the Aboriginal Cultural Heritage Act 2003 . Krystal has formed successful working relationships with the numerous stakeholders affected by the project since the initial planning started two years ago. Traditional owners (TO's) attached to the site rely on the trust that has been established through Krystal and have been providing assistance to the team, facilitating workable solutions. The Cultural Heritage management Plan has been developed and it will be critical that the established relationships are maintained throughout the construction delivery.

Krystal and her partner have recently learnt that they are expecting their first child and intend to co-parent when the baby arrives in four months. Krystal would like to job share with a colleague, Jane, who is also a skilled CH Officer and keen to participate in the arrangement. Krystal's intimate knowledge of the project, the background, and the understanding of the TO's requirements will need to be passed on to Jane. They will need to have regular handover sessions to ensure that their tasks are aligned, and progress updates are clarified. This will have some impact on the efficiency of delivery as there will be time lost in knowledge transfer and an associated site specific knowledge gap risk.

CASE STUDY 2. TIMOTHY:

Senior Project Manager 55 YO

Re: Timothy 's wife, Alison has recently suffered a stroke and he is now required to assist with her daily living.

Timothy is a highly competent project manager with over 35-years' experience in Civil Infrastructure Strategy and Planning. His capabilities and prior knowledge specific to the program that he is currently leading would be difficult, if not impossible to replace within the company. Timothy has led a project team of 6 staff who rely on his extensive experience when assessing delivery risk. This is a highly politically sensitive project that has been scrutinised in the local media and remains a high delivery risk for the company. There are milestones already on a critical timing path.

Alison, Timothy's wife has secured limited "in-house" support that would enable Timothy to work up to four hours in the mornings only. Timothy is contemplating resigning from his SPM position, as he is uncertain how to maintain the quality of input required of his position. (He is thinking of applying for an "Uber" licence).

Continuing to progress the project without Timothy's input is not an option that the company can consider.

CASE STUDY 3. SUSAN

Senior Project Engineer 44 YO

Re: Susan's disabled son will need her care during the day

Susan is a Senior Project Engineer who has been working within the project team of a major rail re-alignment. Susan, a single mother has been working fulltime while her three children attend School and after school care. Susan's youngest child is severely disabled and has been attending the Special Needs Unit attached to the High School. Son, Ben is about to finish high school and there are limited care and facilities available that would allow Susan the time to maintain her full-time position.

Susan plays an important technical leadership role in the team, having been part of the civil delivery project since its early planning 4 years ago. Her intimate knowledge cannot be replaced and subsequently there is a high risk that scope creep may result, as stakeholders have been aggressively canvassing alternatives. Learnings gained through the options development and analysis stages may be lost, resulting in rework and in-efficiencies.

CASE STUDY 4. ARTHUR

Senior Communications Officer/Journalist 50 YO

Re: Arthur needs time to assist in the care of his elderly mother, who's condition has deteriorated.

Arthur has been juggling his fulltime role as the Communication lead on the team delivering the Eastern Freeway Expansion and caring for his mother after work. Arthur is contemplating an early retirement after learning that his mother's condition has deteriorated and that she requires extended care. Arthur would be limited to three standard days a week at work and is concerned that this will not be acceptable within the team as they have been used to him working up to 10 hours per day. He is contemplating a career change that will accommodate his limited hours. Employment options being considered do not utilise his extensive experience dealing with the expectations associated with public transport and daily commuter changes.

The network of professional contacts that Arthur has secured within the media and public relations sectors has facilitated a comprehensive project communication plan critical to the successful delivery of this complex infrastructure project which impacts a significant population. Arthur's expertise could not be replaced.

9.0 NEXT STEPS

The HOKIS team will now work closely with a software developer to produce four trial products. These trial/pilot HOKIS will be deployed to the companies who expressed greatest interest and confidence in the solution throughout the ideation phase.

Funding to develop the trial/pilot program will be sought through the pilot program participant companies, anticipated at a contribution of $20,000 per company ($100,000 total) which is expected to cover costs.

APPENDIX A – SUPPORTING RESEARCH

The construction sector involves location-based work and often a culture of long hours. The increasing challenges with the ageing workforce, the lack of gender diversity and skills shortage have contributed to wellbeing issues among workers and forced the industry to search for long-term solutions.

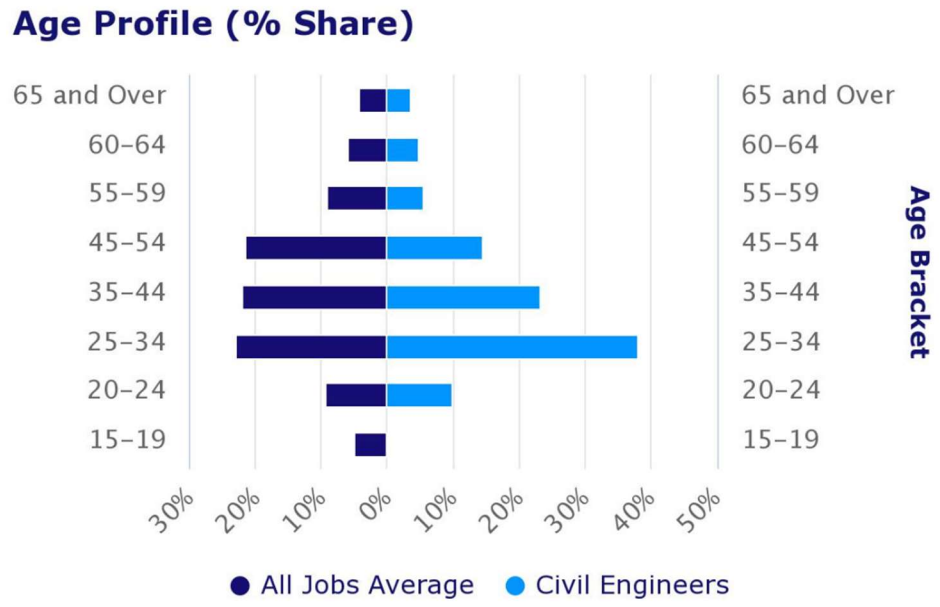
Organisational practices, non – standard work arrangements, flexible schedules and the use of technology are all going through a substantial change within our industry. In addition to this, the demographic and technological changes that have modelled the way we work in the past seem more pronounced with a push within the workforce for more flexibility in the way in which we approach our work.

The available evidence supports that work flexibility in terms of location and work hours gives workers some sense of job control, improves their engagement, and increases their job satisfaction, thereby improving their health and well-being.

In tandem, adoption of the Culture in Construction standards are vital to securing the long-term sustainability of the sector. Failing to address cultural issues such as excessive work hours, fatigue and poor mental health will keep from attracting untapped workforces.

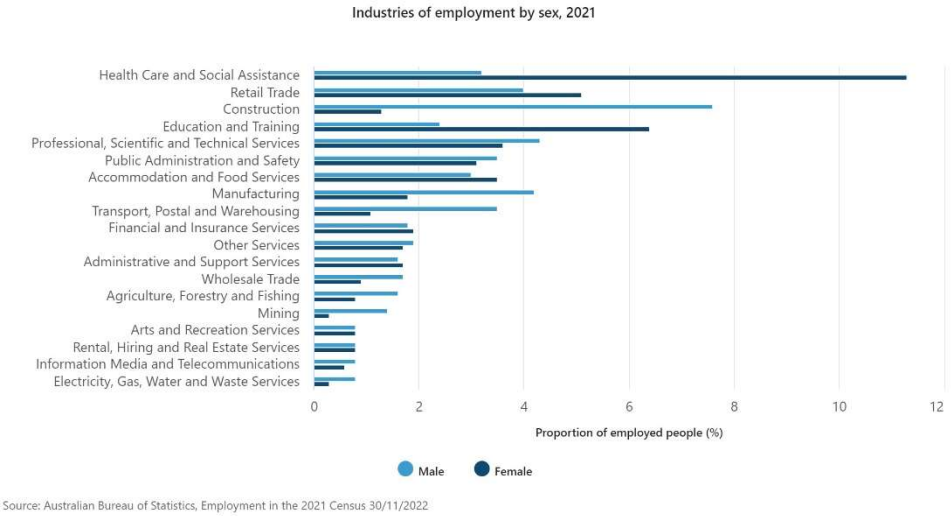
Source: Culture in Construction 2022, Culture Standard Overview, Culture in Construction, https://cultureinconstruction.com.au/culture-standard/

If we look at the average age profile of civil engineers, it aligns with those seeking flexibility within their work.



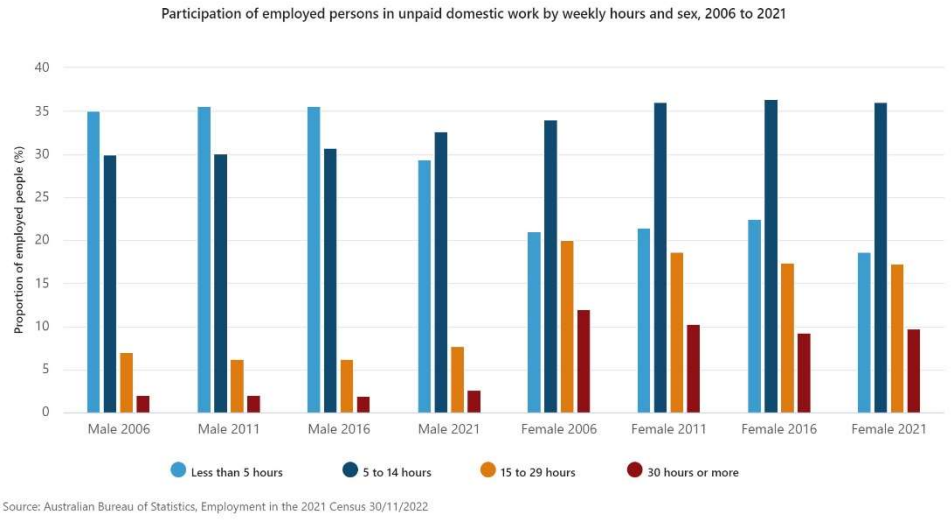
Source: Based on ABS Census 2016, Customised Report. Age profile of workers in this job compared to the all jobs average.

Women within our industry are also significantly underrepresented in comparison to other industries.

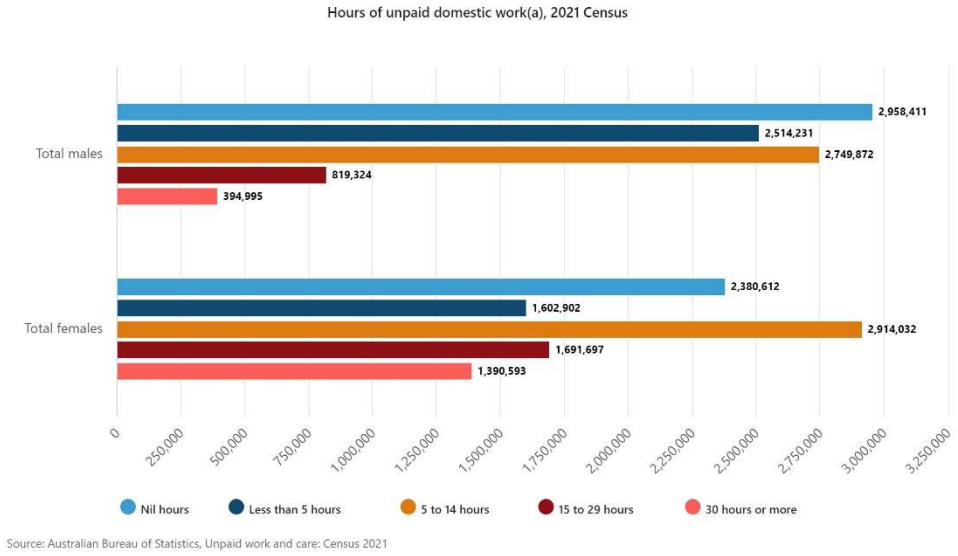


Source: Based on ABS Census 2022

With women also engaged in significantly more unpaid domestic work than their male counterparts.

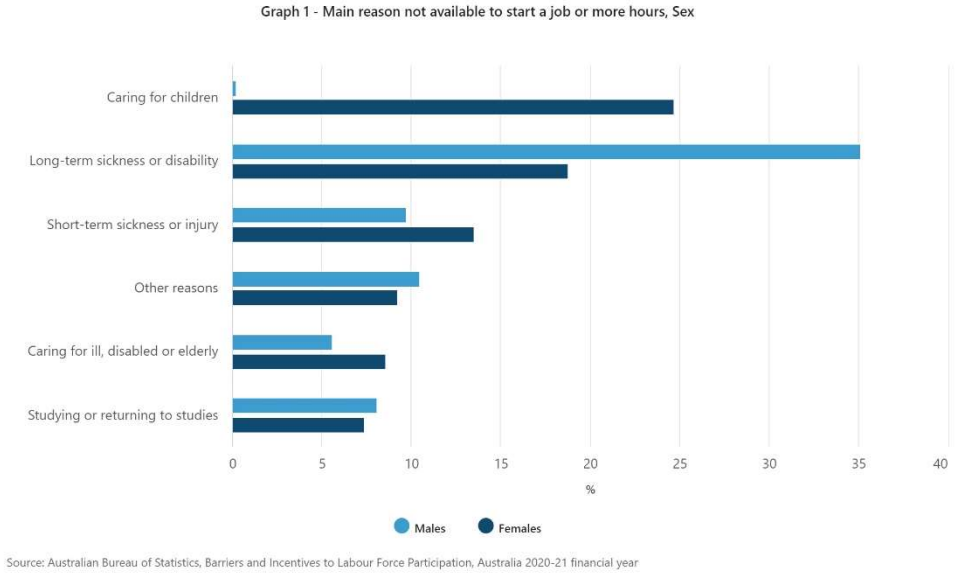


Source: Based on ABS Census 2022

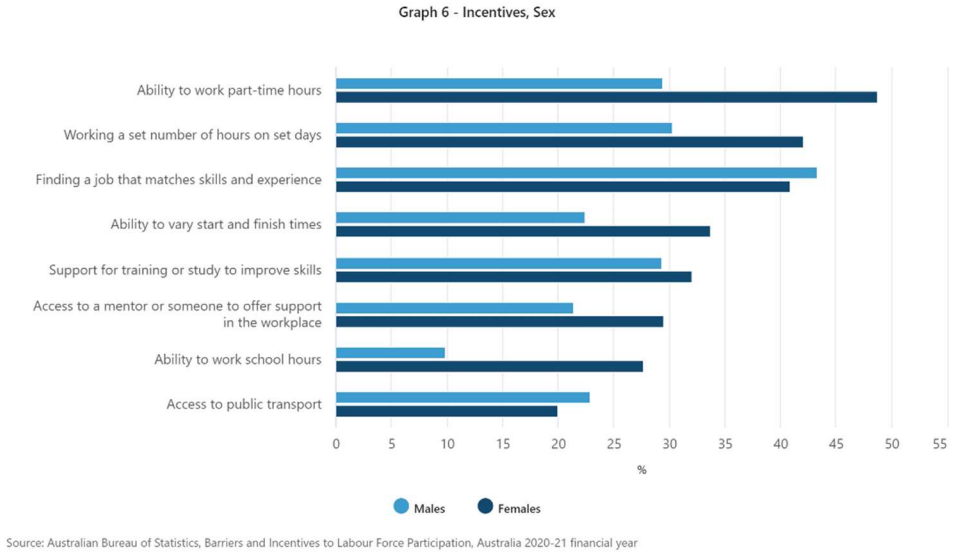


Source: Based on ABS Census 2021

With the lack of flexibility within the construction industry this leads itself to the roadblocks women face in both staying within the industry and entering the industry.



Source: Australian Bureau of Statistics, Barriers and Incentives to Labour Force Participation, Australia 2020-21 financial year



Source: Australian Bureau of Statistics, Barriers and Incentives to Labour Force Participation, Australia 2020-21 financial year

In Australia, women are three times more likely to be working part-time than men. Many of these women are working mothers taking time out of the workforce to look after children. The value of unpaid childcare work is around $345 billion, which makes it almost three times larger than the financial and insurance sector combined. The burden of providing this care falls disproportionately on women. For every hour of unpaid care work done by men, women do one hour and 46 minutes

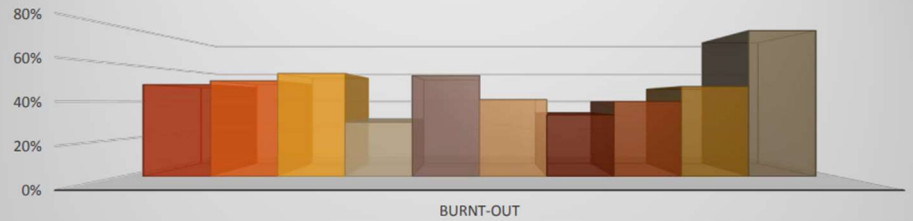
Source: WGEA

The lack of flexibility is not an issue that only affects the females within the workforce, in research carried out by The University of Melbourne, within their 2023 State of Future Work Report it highlighted its findings that Australian prime aged workers are exhausted, less motivated about their work and unable to concentrate at work because of responsibilities outside of work. It also found that 1-in-2 workers aged between 18 to 54 feel exhausted at work.

- This mirrors research carried out by Swinburne University, with key findings in their research below:
- Average levels of depression, anxiety and stress exceeded population norms by 40% for depression, 38% for anxiety, and 37% for stress.
- Between 62-71% of respondents returned "normal" levels of mental health (for Depression, Anxiety and Stress ratings), indicating that between 29-38% of the employees taking part were suffering from psychological illness; compared with 18% of the Australian population. Levels of "mood disturbance" were 2.5 times higher than the normal population and exceeded those reported by psychiatric patients seeking treatment.

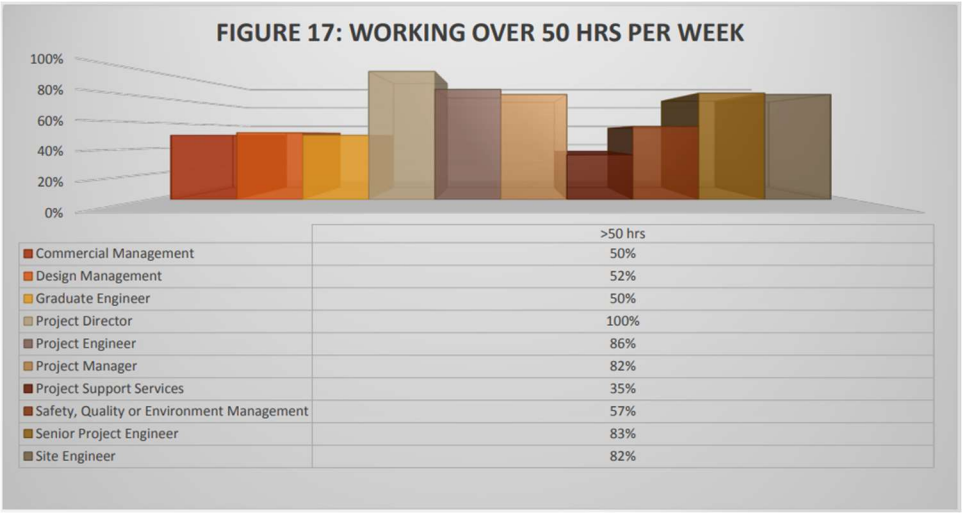
- Experience of three particular negative moods (Depression, Anger and Fatigue) exceeded the normal population by a factor of 2 to 3. Consistent exposure to negative mood states can precipitate to clinical levels of psychological distress.
- Levels of physical health complaints were observed to be 50% higher than the normal population and worse than the comparison populations (Civil Engineers & Correctional Officers). With 68% of respondents exceeding the threshold limit score that indicates the likelihood of psychiatric illness.
- 75% of respondents are suffering from moderate to high levels of stress.
- 46% of respondents met the criteria for being burnt-out, in comparison to the normal population rate of 28%. • 64% of respondents reported working over 50 hours per week. Notably, extremely high rates of Project Directors (100%), Project Engineers (86%), Project Managers (82%), Senior Project Engineers (83%), and Site Engineers (82%) report working in excess of 50 hours per week.
- In contrast to the general population in which 20% of people report be dissatisfied with their work-life balance, 59% of the respondent's endorsed being 'unsatisfied' with their level of work-life balance.

FIGURE 16: BURNOUT BY JOB ROLE



	Burnt-out
Commercial Management	49%
Design Management	51%
Graduate Engineer	55%
Project Director	29%
Project Engineer	54%
Project Manager	41%
Project Support Services	33%
Safety, Quality or Environment Management	40%
Senior Project Engineer	48%
Site Engineer	78%

Source: Downey, L. & Stough, C. (2018) 'Measuring the psychological impact and work related stress and related occupational factors in the Australian infrastructure construction industry'- Swinburne University of Technology



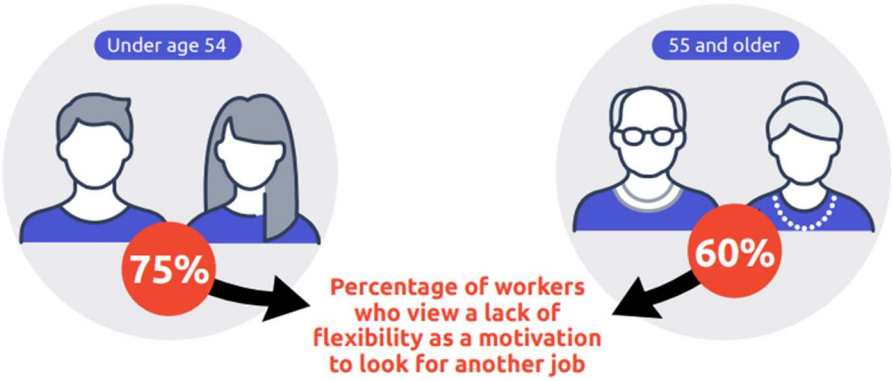
	>50 hrs
Commercial Management	50%
Design Management	52%
Graduate Engineer	50%
Project Director	100%
Project Engineer	86%
Project Manager	82%
Project Support Services	35%
Safety, Quality or Environment Management	57%
Senior Project Engineer	83%
Site Engineer	82%

Source: Downey, L. & Stough, C. (2018) 'Measuring the psychological impact and work related stress and related occupational factors in the Australian infrastructure construction industry'- Swinburne University of Technology

Data gathered as part of the State of Future Work report has shown, young and middle-aged workers resemble the 'quiet quitter' or 'great reluctance' profile. Since the start of the pandemic, their workplace motivation is down, and they are unable to concentrate at work. They are exhausted and time poor. There's little opportunity for advancement and their mental health is suffering. Many are thinking of resigning. While Australia did not experience a 'Great Resignation' in 2021 and 2022, it is clear that the Australian prime aged workforce has not recovered, and businesses may face declining productivity and workforce attrition if they do not attend to these issues

Source: 2023 State of the Future of Work

Research found that 3 out of every 4 prime aged workers under the age of 54 reported that a lack of flexible work options in their workplace would motivate them to leave or look for another job. This sentiment is not only reserved for the prime aged workforce. We find a significant proportion of older workers also want access to flexible working options albeit less so than the prime aged workforce with 6 in every 10 mature aged worker reporting that a lack of access to flexible work would motivate them to leave their current jobs



Similarly in research carried out as part of the Culture in Construction – A Culture Standard for the Construction Industry October 2021, the major challenges facing the construction industry are long work hours, wellbeing, and lack of diversity.

- Long Work Hours:
- 64% report working >50 hours per week
- 59% unsatisfied with work life balance
- 14% construction industry employees experiencing presenteeism

Wellbeing:

- 2x suicide rate vs national average
- 75% report moderate to high stress levels
- 46% experiencing burn-out
- Lack of diversity:
- #1 most male-dominated industry
- 12% of the workforce is female
- <2% of on-site roles occupied by women

These impacts include fatigue, potentially leading to increased absenteeism and/or presenteeism, as well as increased chance of workplace injury and higher staff turnover. Evidence suggests that the Australian construction sector could gain economic benefits by addressing the current culture towards extended working hours.

It is well documented that the productivity of a construction worker reduces the longer they work extended hours. In general terms, there is a 1 per cent loss of productivity for each additional hour worked per week above a regular 40 hour working week.

Overall, the Culture in Construction – A Culture Standard for the Construction Industry report found that the cost of the current culture of the construction industry in Australia regarding wellbeing, diversity and hours of work is approximately $8 billion annually.

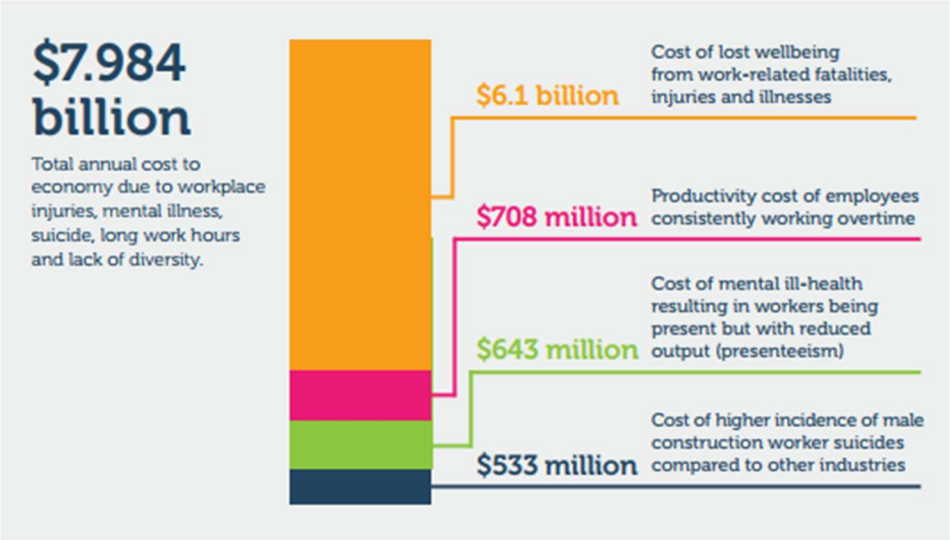


Figure: Summary of estimated costs of the current construction culture.

Source: Downey, L. & Stough, C. (2018) 'Measuring the psychological impact and work related stress and related occupational factors in the Australian infrastructure construction industry'- Swinburne University of Technology

APPENDIX B – SURVEY OF POTENTIAL CLIENTS

Nathan Walden
Senior Digital Designer
Mott MacDonald

Question 1	Do you think you or your company would use this type of software?
Response	Yes, I can see value in this software. I think it would give more clarity around project scope and better manage and organise communications between teams on a JV for example. This would be especially helpful for new starters.
Question 2	What roles/ teams/ departments would use this?
Response	I can see the Transport sector using this on large and complex rail and road projects but all sectors would benefit if it was advertised in the correct way.
Question 3	Would this platform expand the level of capability that your flexible workers are currently able to provide?
Response	If the software is able to manage and take over some of the more menial/admin tasks related to technical roles it would allow these staff members to be more productive with their time and therefore enjoy a better work life balance. I believe the action ownership portion of the software would be very useful and valuable. Not so much to keep staff in line per say but for staff to better understand their roles, future workload and give everybody a clearer direction towards the deliverable.
Question 4	What do you believe would be the main benefits?
Response	Ideally an AI based software would also keep track of optioneering on large scale projects to minimise the amount of reworked options that result in non-usable solutions. This could be linked to client comments from prior submissions, Rfi's, SID workshops and PSTR for example to keep the project development on track and therefore more efficient in its deliverables and use of staff hours.
Question 5	Would you have any concerns using or having some of your team using it?
Response	Possibly security risks if working on a large joint venture in sharing information across companies. The software would need to be scrutinised and potentially managed in its initial integration into a project environment to determine how a self-learning AI program determines its decision making based against prior human

	thought outcomes and compare these for better or worse. The software could then be further developed in the right direction.
Question 6	Do you have any other feedback or thoughts you'd like to share?
Response	AI technology to manage project emails would be useful. I find in large projects that emails can sometimes be missed purely due to the volume coming in. For example, an email from a client of concern from another discipline on a certain topic within a project may not seem important at the beginning but becomes more relevant as the design progresses or the project potentially moves in a different direction. The software could pull keywords into a 'brainstorm' style workspace for an engineer/designer to confirm that nothing has been missed.

Ellen Connor
CFO
FSC Group

Question 1	Do you think you or your company would use this type of software?
Response	I think we would be open to anything that helps promote job share and flexibility . There are people at FSC (myself included) who definitely understand that people who perform part time, job share or flexible roles can be just as valuable (if not more valuable) than those in traditional full time roles. However, I do not think that this is a majority held view – there is weight of history and industry expectation which assumes part time is less valuable.
Question 2	What roles/ teams/ departments would use this?
Response	I'd say most useful for on-site engineering roles.
Question 3	What do you believe would be the main benefits?
Response	The assistance with communication allowing two people to seamlessly perform one role
Question 4	Would you have any concerns using or having some of your team using it?

Response	Only concern is the number of software systems we all need to deal with these days, and this is adding yet another system on top
Question 5	Do you have any other feedback or thoughts you'd like to share?
Response	No

Darryl Jones
District Director
Far North
Program Delivery and Operations

Question 1	Do you think you or your company would use this type of software?
Response	Yes – flexible work opportunities are supported and something like this would improve productivity
Question 2	What roles/ teams/ departments would use this?
Response	Program support
Question 3	Would this platform expand the level of capability that your flexible workers are currently able to provide?
Response	Yes
Question 4	What do you believe would be the main benefits?
Response	Efficient handover between staff to ensure work does not fall between the handover
Question 5	Would you have any concerns using or having some of your team using it?
Response	As a trial it could be an option
Question 6	Do you have any other feedback or thoughts you'd like to share?
Response	Nil

Jim Frith
Managing Director – Australia
McConnell Dowell

Question 1	Do you think you or your company would use this type of software?
Response	Yes, following a proof of concept (or similar) test internally. Refer attached example.
Question 2	What roles/ teams/ departments would use this?
Response	Initially all support functions. I think it has the potential to also be used
Question 3	Would this platform expand the level of capability that your flexible workers are currently able to provide?
Response	Yes
Question 4	What do you believe would be the main benefits?
Response	Efficiency More our work environment more attractive More responsive/quicker turnaround to project needs
Question 5	Would you have any concerns using or having some of your team using this platform?
Response	No, subject to adequate thinking and effort being invested in the Change Management aspects.
Question 6	Do you have any other feedback or thoughts you'd like to share?
Response	Are there any adjacent industries or Sectors where this technology is in use? E.g. hospitality, health, etc.

Phil Hendy
Group Innovation Lead
McConnell Dowell

Question 1	Do you think you or your company would use this type of software?
Response	I would like to think so. If somebody was willing to do a quick and cheap trial and that demonstrated desire and value, it would present a strong case.

Question 2	What roles/ teams/ departments would use this?
Response	It would be great if it could work for engineers on projects, as there are so many of them. However, I suspect this might be a harder role to work as their work is dynamic and standard process is typically ill-defined and not well followed. I would recommend starting with admin or functional support roles.
Possible	Would this platform expand the level of capability that your flexible workers are currently able to provide?
	I suppose so. 2 minds are greater than 1.
Question 3	What do you believe would be the main benefits?
Response	Beyond the last point and common job sharing benefits, it could also help individual users improve on self-reflection (eg. if voice recognition journalling), increase standardisation and use shared accountability and diversity of thought to drive for more continuous improvement.
Question 4	Would you have any concerns using or having some of your team using it?
Response	Innovation comes with risks. Using cyclical small experiments to learn and develop such a solution, and not being afraid to pivot, will help manage those risks.
Question 5	Do you have any other feedback or thoughts you'd like to share?
Response	I think it's great you're tackling this problem. Another bit of advise (learnt the hard way) is that you fall in love with the problem, not the solution.

McConnell Dowell senior executive

Question 1	Do you think you or your company would use this type of software?
Response	Absolutely, provided it demonstrated a good ROI.
Question 2	What roles/ teams/ departments would use this?
Response	Cant see why anyone wouldn't use a solution that enables the benefits (or rather addressed the challenges) above

Question 3	Would this platform expand the level of capability that your flexible workers are currently able to provide?
Response	Somewhat as current work practices are technically able to meet flexible work arrangements (i.e. remoteness and connectivity). It would however benefit from augmentation through AI where for example knowledge might be required in job sharing arrangements but skill was not yet at parity for those sharing the task. A frequently updated company level LLM would be required to facilitate this.
Question 4	What do you believe would be the main benefits?
Response	- Improved work-life balance - Enhanced productivity - Flexible scheduling - Remote work support - Skill enhancement - Cost savings - Talent retention - Customised work environments - Data-driven decision making - Reduced bias - Scalability - Global collaboration
Question 5	Would you have any concerns using or having some of your team using this platform?
Response	Yes, although the value of human/machine collaboration will be the biggest thing since the advent of the internet, as with any game changing technology, we need to be cognisant of the privacy, security and ethical issues. I believe the benefits will far outweigh the concerns/challenges though.
Question 6	Do you have any other feedback or thoughts you'd like to share?
Response	Not sure if some of these use cases actually need AI or simply adoption of improved practices facilitated by existing collaboration and knowledge management solutions. Avoid getting sucked into the AI hype/FOMO. Making use of smarter discovery solutions (AI based search on company data) would be great though. Fortunately, much of the above would be a reality once Microsoft's co-pilot becomes generally available noting early versions won't live up to the hype but will rapidly progress to near-human augmentation of most knowledge worker roles. Initial testing within MCD is planned for Q4 '23.