Cardinia Shire Council

Civil Maintenance Service Review 2025

August 2025

Prepared by:

Cardinia Shire Council
in association with Ninety Mile Consulting

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ABN: 32 210 906 807
20 Siding Avenue, Officer

PO Box 7, Pakenham Vic 3810

Phone: 1300 787 624
Email: mail@cardinia.vic.gov.au
Web: cardinia.vic.gov.au

Acknowledgement of Country

Cardinia Shire Council acknowledges the traditional custodians of the lands of Cardinia Shire, the Bunurong and Wurundjeri people, and pay respects to their Elders, both past and present.

Contents

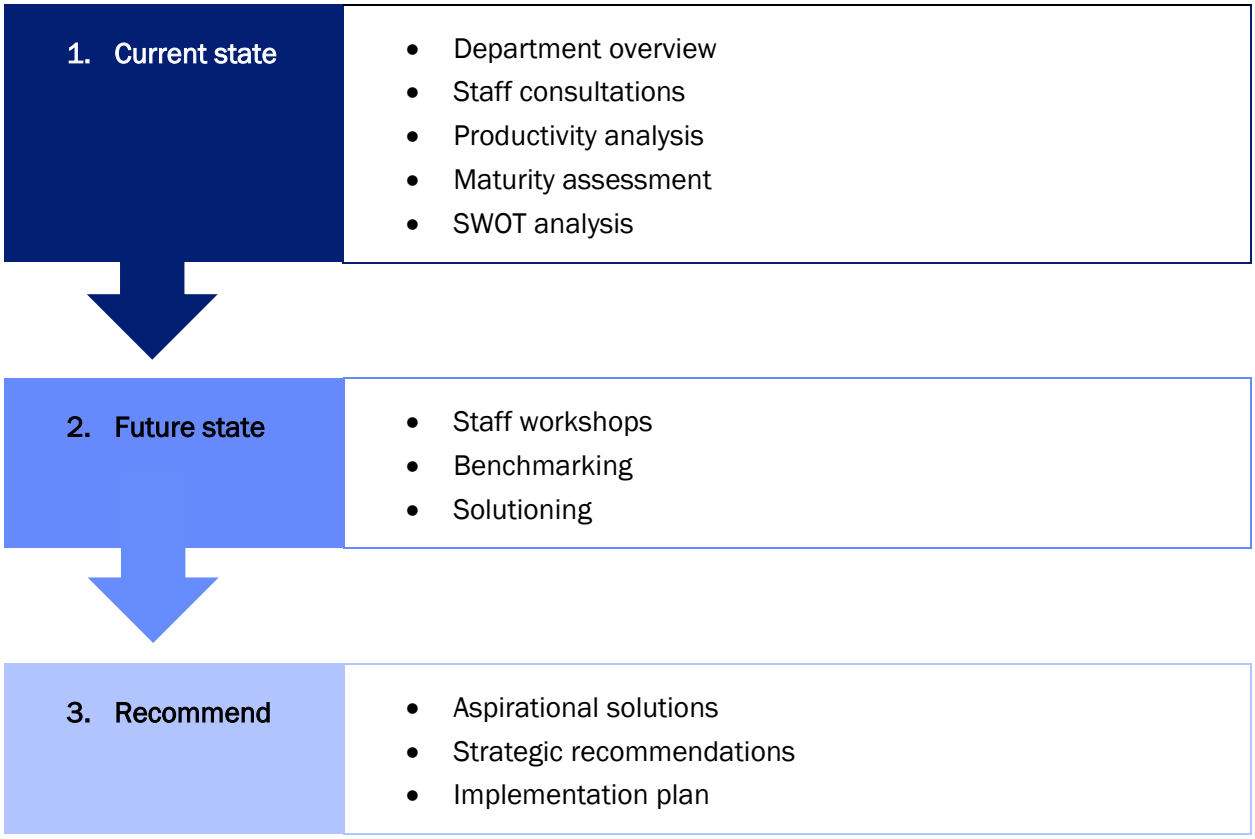
Introduction and project approach

The Civil Maintenance service review followed a structured three-phase approach to assess performance, identify opportunities, and prioritise improvements.

Phase One – Current State examined all four streams of civil maintenance, providing a department overview, maturity assessment, productivity analysis, and staff consultations. This broad review enabled a clear understanding of the structure, processes, and synergies between streams, as well as the key challenges impacting service delivery.

Phase Two – Future State and Phase Three – Recommendations focused on the unsealed roads and drainage teams, where the most significant intervention was required. Future State work included staff workshops, benchmarking, and co-designed solutions addressing the challenges and growth areas identified in Phase One.

Recommendations were prioritised using a gold, silver, and bronze framework, outlining investment requirements and implementation timeframes to provide Council with a clear, actionable roadmap for improvement.



1. Current State

Local context

Cardinia Shire Council (CSC), located in Southeast Victoria, consists of a diverse landscape and geography covering roughly 1,280km2.

The Northern region which encompasses areas like Gembrook and Emerald is made up of rolling hills, steep inclines and dense forests.

In comparison, the Southern region near Koo Wee Rup and Lang Lang is predominantly flat, comprised of mostly farmland and low-lying plains.

CSC operate out of the main depot on Purton Road in Pakenham. This central location allows them to effectively service the whole municipality. The main dumping site is located in Bayles (Southern Cardinia) which can create difficulties when travelling from the northern region.

These diverse landscapes which separate the North and South represent one of the main challenges the Civil Maintenance department face.

Rainfall

Rainfall plays a critical role in the civil maintenance landscape across Cardinia Shire.

In Gembrook to the north, annual rainfall averages approximately 1,307 mm, leading to frequent and intense water-driven wear such as potholes, corrugations, and blocked drains.

In contrast, Lang Lang, in the south, experiences much milder precipitation—around 693 mm per year—which results in a different profile of defects.

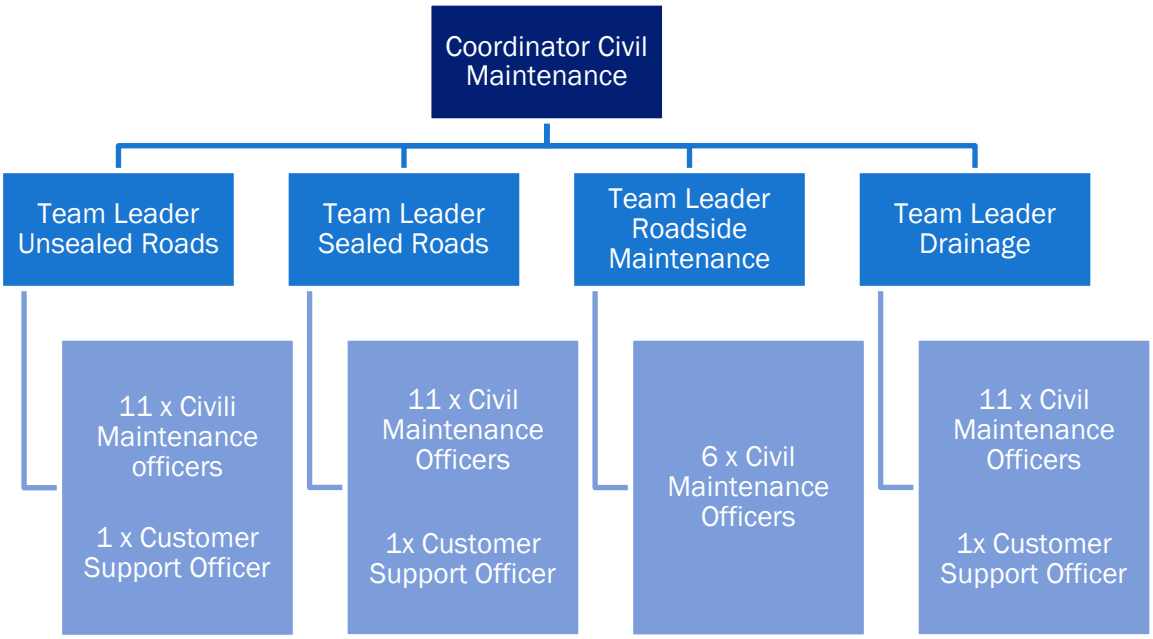
Highlighting this north–south variance underscores why certain maintenance streams, especially drainage and unsealed road management, are under greater pressure in the higher-rainfall northern areas and helps justify the need for targeted resource allocation. This challenge is exacerbated due to the main dumping site being located in the south, extending travel times for most jobs.

Civil Maintenance Department Overview

The Cardinia Shire Council Civil Maintenance department is broken up into 4 teams.

The Drainage, Sealed and Unsealed Roads teams each have 11 civil maintenance officers and one customer support officer each.

The Roadside Maintenance team is made up of 6 civil maintenance officers.



Unsealed Roads Team

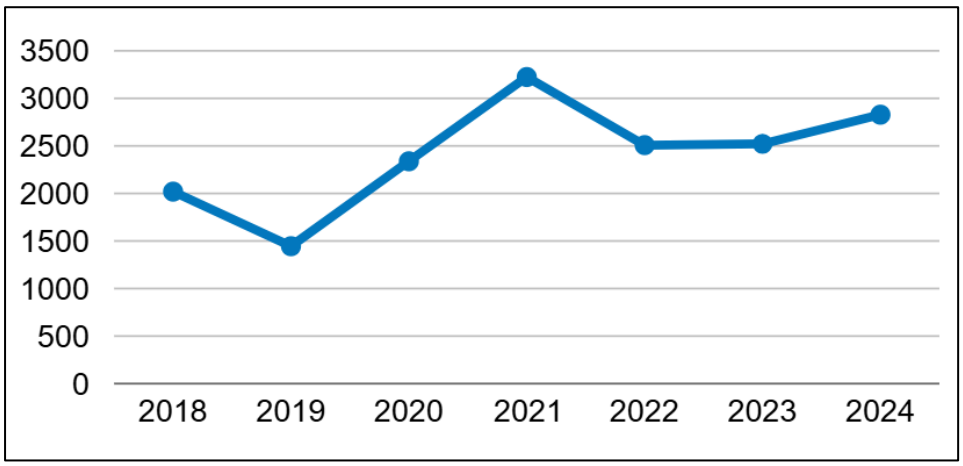
Scope

The Unsealed Roads team are responsible for managing CSC's 831km network of unsealed roads (as recorded at the commencement of this review).

With such a large network, this leaves the unsealed roads team responsible for grading, potholes repair, corrugation repair, dust suppression and resealing.

To manage this, the Unsealed Roads team have a fleet of 6 graders and 5 water trucks which double as rock carting trucks in the wetter months.

Defects

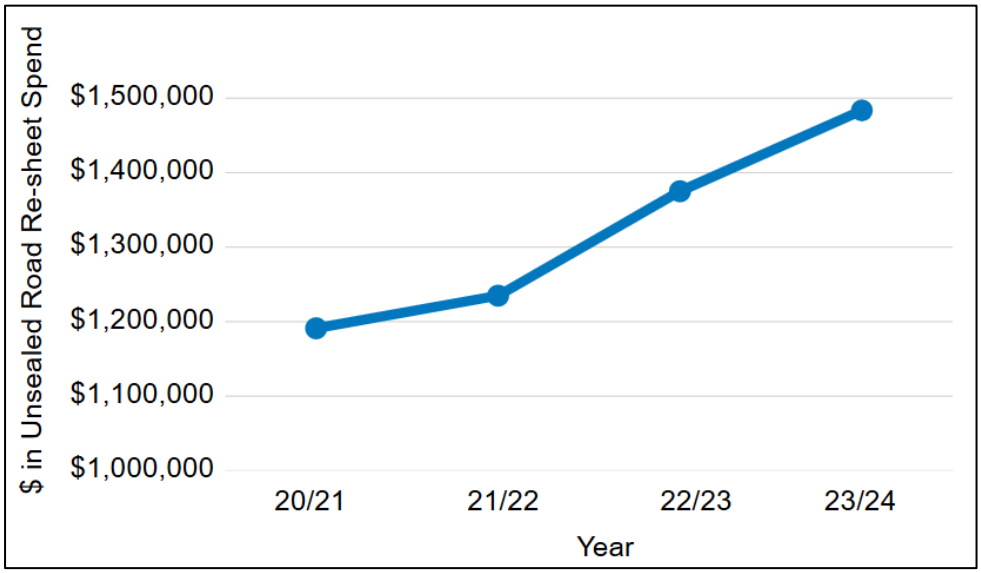


Number of unsealed defects 2018-2024

The above graph highlights the trend in unsealed roads defects over a 7-year period. Defects have increased across the timeframe, reaching a peak in 2021.

The increase in trend is an indication that unsealed roads are getting harder to maintain and new measures like capital investment or additional resource allocation may be necessary to reduce defects.

Capital Budget Spend



Unsealed roads re-sheet spend 2020/21 - 2023/24

The above graph shows the trend in unsealed road re-sheeting expenditure from 2020/21 to 2023/24, with capital spend increasing each year.

The year-on-year growth reflects CSC's ongoing efforts to improve the condition of its unsealed road network, which is under pressure from increased usage, accelerated deterioration, and the presence of some assets deemed unmaintainable due to challenging landscape and weather conditions.

Sealed Roads Team

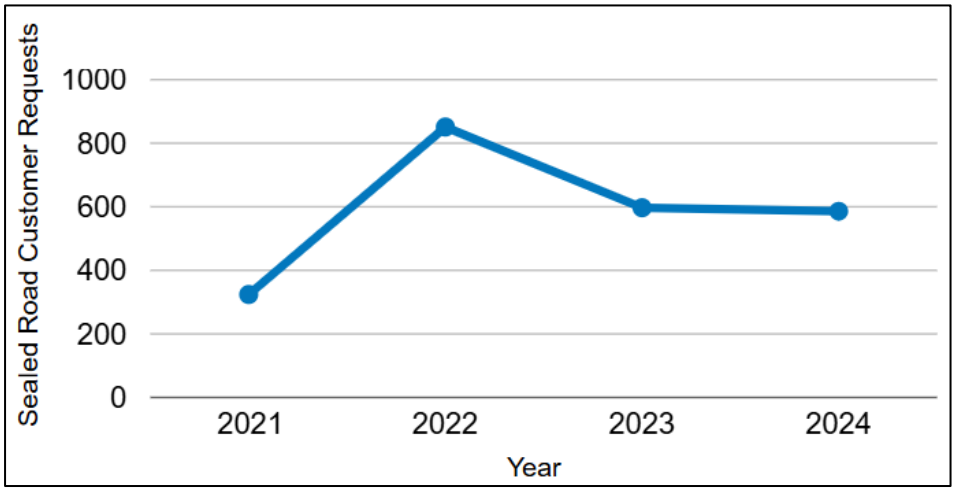
Scope

The sealed Roads team are responsible for managing CSC's 810km network of sealed roads (as recorded at the commencement of this review).

To manage this road network the Sealed Roads team has a fleet of 2 Flocon trucks and 2 street sweepers. The Sealed Roads team are not responsible for:

- Any driveway or pathway that provides access to private property.
- Any road that is maintained or managed by VicRoads.

Customer requests



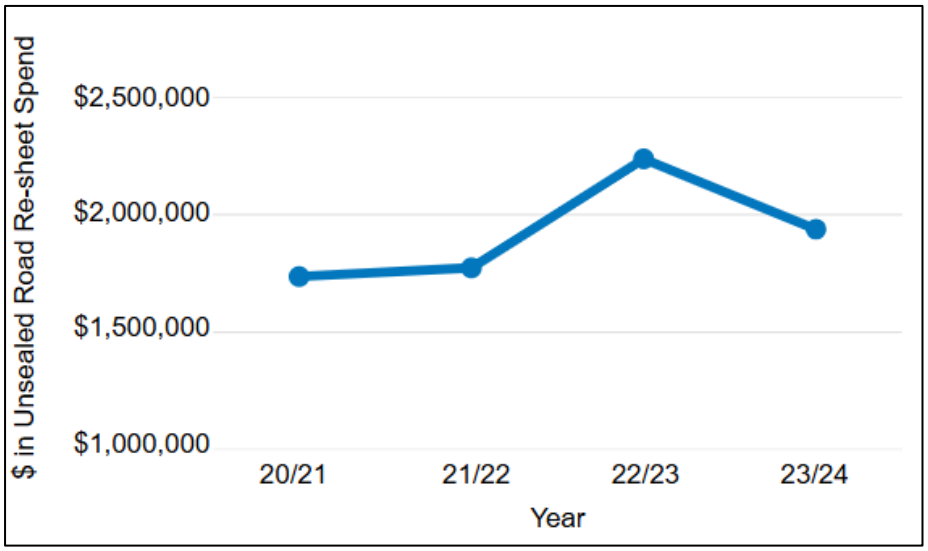
Number of sealed road customer requests 2021-24

The above graph illustrates the trend in sealed road customer requests from 2021 to 2024, with a peak in 2022.

The spike was driven by several significant weather events that year, including extreme rainfall in June, August, and November, as well as reports of flash flooding in some areas in November.

This pattern underscores the need for the team to respond rapidly and effectively to weather-related impacts on the road network.

Operating spend



Sealed road operating spend 2020/21 - 2023/24

This graph shows the trend in sealed road operating expenditure from 2020/21 to 2023/24. The overall trend saw an increase in sealed road operating spend, reaching a peak in 22/23 of $2,237,122.

This overall increase indicates that asset condition is decreasing for sealed roads. This is likely due to increased usage and accelerated deterioration from changing weather patterns.

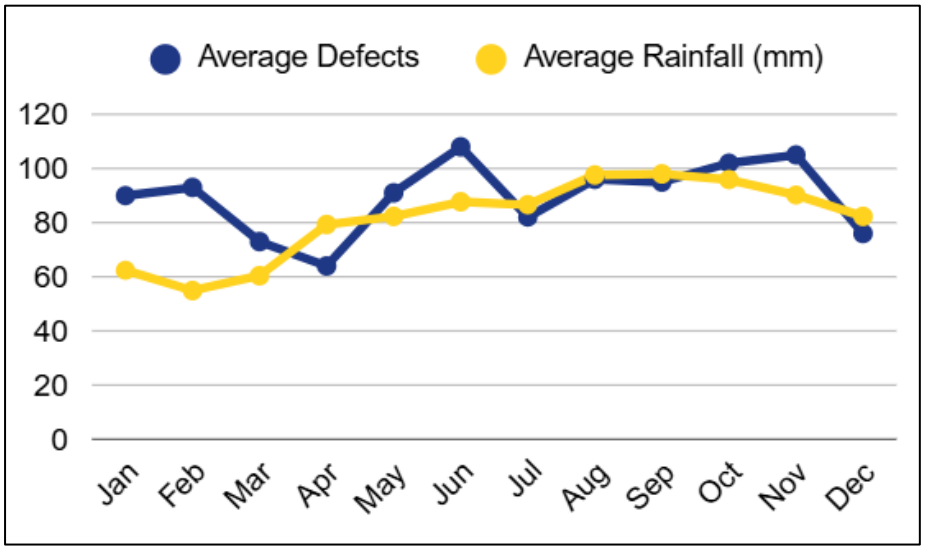
Drainage Team

Scope

The Drainage team are responsible for maintaining over 2,000km of drainage assets, which have a replacement value of over $292M (as recorded at the commencement of this review).

The drainage portfolio includes assets such as open drains, pits and pipes. To manage this portfolio the drainage team has a fleet of 2 backhoes, 2 excavators and 7 dump trucks.

Rainfall and defects



Average monthly drainage defects and average monthly rainfall in Cardinia

The above graph compares the average monthly rainfall in CSC with the average monthly drainage defects, showing a strong positive correlation that when the average rainfall increases, the average number of drainage defects also increase. This correlation highlights the impact of rainfall on drainage system performance as well as the reactive nature of the service.

Distribution of drainage defects

The distribution of drainage defects covered 45 locations, with the top 8 accounting for 70% of all drainage defects. This highlights the need for a structured approach to team allocation and job prioritisation.

The high proportion of defects in Pakenham is likely due to the concentration of drainage assets in the area. In contrast, Cockatoo and Emerald's high proportion may be attributed to their varied topography and hilly landscapes, which make many assets in that area difficult to maintain.

Location	Percentage of drainage defects 2024
Pakenham	20.6%
Cockatoo	13.6%
Emerald	11.2%
Beaconsfield Upper	6.2%
Bunyip	4.6%
Officer	4.6%
Beaconsfield	4.4%
Gembrook	4%

Distribution of drainage defects

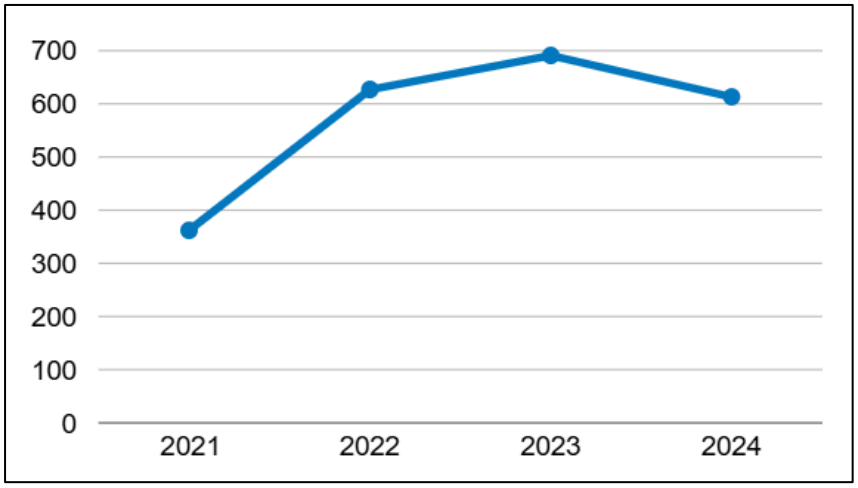
Roadside Maintenance Team

Scope

The Roadside Maintenance team are responsible for 739KM of footpaths across the shire (as recorded at the commencement of this review).

As well as this, they have to manage and maintain road shoulders, pit lids, roadside mowing, roadside spraying, guard rails and street signs. To manage this, the Roadside Maintenance team have a fleet of 3 tractors, 1 skid-steer loaders, 2 trucks and 1 large tipper.

Defects



Roadside maintenance customer requests 2021-24

The above graph depicts the volume of roadside maintenance customer requests between 2021 - 2024.

2021 saw a low of 362 customer requests although this was due to the volume of requests only being tracked between July - December for that year.

The volume of requests remained relatively stable between 2022 - 2024, indicating that roadside maintenance infrastructure is being well maintained.

Productivity analysis

Methodology

The Productivity Analysis assessed CSC's Civil Maintenance department across 7 key areas using a holistic approach guided by data, subject matter expertise, and community insight.

Both qualitative and quantitative data, along with field observations, were analysed to ensure all challenges and priorities were identified.

The Civil Maintenance staff participated in a workshop to list and prioritise their most significant challenges within each area. This was to ensure the subject matter experts were included in the analysis. Councillors were also engaged through a similar process to capture the concerns and priorities of the community.

Framework

Quality	Quality represents errors in maintenance that result in rework
Over-servicing	Over-servicing occurs when maintenance exceeds actual requirements
Waiting	Waiting measures process delays and idle time
Underutilised resources	Under-utilised resources refers to opportunities to improve efficiency in resource management
Transportation	Transportation waste examines unnecessary plan and equipment movement
Processing	Processing identifies unnecessary workflow complexities
Inventory	Inventory relates to excess material storage and usage

1. Quality

- Training: Differing levels in training across the civil maintenance officers' results in varying standards of work quality. This often leads to reworks due to poor quality maintenance.
- Lack of quality control: The department executes a low-level maturity of quality control to monitor or assess the quality of completed work and its deterioration overtime.
- Rehabilitation under-prioritised: Civil maintenance officers reported they prioritise closing out the defect over full rehabilitation of the asset. This means that often times the root cause of the issue is not addressed leading to re-works.
- Ad-hoc decision making: The absence of a unified decision-making protocol leads to inconsistency in case interpretation and service delivery.

2. Over-servicing

- **Community expectation:** The community are not aware of their obligation to maintain their private culverts and therefore the expectation often falls on Council.
- **Unmaintainable assets:** In some areas, the landscape and topography make certain assets effectively unmaintainable. Their susceptibility to weather-related damage leads to frequent repairs, resulting over-servicing.
- **Multiple levels of triage:** The defect resolution process passes through multiple layers of triage—resident, customer experience, customer support officer and the maintenance crew. This leads to over-servicing, as defects may be inspected multiple times before action is taken.

3. Waiting

- **Insufficient data upload:** Customer Support Officers spend an average of 1.5 hours per day uploading data from the CRM, reducing time available for field activities.
- **Under-utilised drainage fleet:** Drainage dump trucks can wait over 1.5 hours before their first load is transported, with additional trucks idle until the first is filled—resulting in significant downtime and inefficient use of resources.
- **Response timeframes:** Customers are often provided with a generic standard timeframe that does not accurately reflect actual service delivery. This can lead to repeated follow-ups and duplicate requests, resulting in unnecessary rework and inefficiencies.

4. Under-utilised resource and inventory

- **Cross training:** Only 20% of staff are cross trained, reducing flexibility and opportunities for collaboration across teams.
- **Uncalibrated fleet:** Inaccurate dump truck weight calibrations reduce carrying capacity and efficiency leading to repeated trips.
- **Unoptimised drainage fleet:** Current drainage teams are equipped with backhoes that cannot operate perpendicular to the drains limiting efficiency in certain works.
- **Equipment endorsement requirements**: A minimum of 100 hours training per equipment type is required regardless of prior experience or competency levels, slowing cross-training and limiting workforce versatility.

5. Transport

- **Location of key sites:** The primary Material Storage Facility site at Bayles, located in the south of the Shire, causes delays for drainage crews operating in the north, with crews often idle while waiting for dump trucks to complete long return trips.
- **Inaccurate defect information:** Customer requests frequently contain insufficient or incorrect details, causing officers to travel to the wrong location before identifying the actual defect site.

6. Processes

- **CRM system lacks automation:** The community are not aware of their obligation to maintain their private culverts and therefore the expectation often falls on Council.

- **Reactive maintenance**: The Civil Maintenance department operates using a reactive maintenance style which can lead to over-servicing as assets are repeatedly repaired after each defect or weather event, rather than addressing underlying issues.
- **Customer service**: Customer service staff lack access to complete work order information, requiring customer calls to be redirected to Civil Maintenance team leaders. This not only delays customer resolution but also reduces the time team leaders can dedicate to field operations.

Maturity assessment

The Maturity Assessment evaluates the Civil Maintenance department's organisational capability across 9 key pillars, each comprising specific functional elements scored against defined criteria. This framework enables a holistic assessment, combining qualitative and quantitative evidence gathered through data analysis, staff consultations, ride-alongs, and workshops.

Maturity assessment

	0	1	2	3	4
Strategic direction			■		
Functional design				■	
Governance			■		
Key performance management		■			
People and culture			■		
Department design			■		
Process design			■		
Systems and technology		■			
Plant and equipment			■		

Expected score

The Civil Maintenance Department recorded a maturity score of 17, which falls outside the expected range for peri-urban councils (22-32).

As Cardinia is a peri-urban council, this benchmark represents the level they are aspiring to achieve. The current result reflects the challenges peri-urban councils face in managing extensive sealed and unsealed road networks with limited resources, which can constrain their ability to reach higher maturity levels.

The Civil Maintenance Department is committed to closing this gap by streamlining digital infrastructure and optimising operational processes and performance management.

Council type	Average maturity score
Metropolitan	28-36
Peri-urban	**22-32**
Regional	18-28
Rural	16-26

Average Council maturity score

2. Future state and recommendations

Recommendations

As part of the Future State, the Civil Maintenance department were provided with three recommendations. These included a gold, silver and bronze standard.

Whilst all improvements recommended to the department are considered valuable, this final stage of analysis provides further strategic clarity by categorising each recommendation into a gold, silver or bronze standard.

These tiers are not rankings of importance alone but rather a reflection of the balance between effort and reward, acknowledging that the most transformative solutions often demand the greatest commitment of time, resources, and change readiness.

Gold	• The Gold tier represents the most aspirational and high impact solutions • These recommendations have the potential to deliver significant, long-term organisational benefits and improvements to service delivery and community outcomes • However, with the highest impact they also require larger investments, cultural change and team collaboration
Silver	• The Silver tier recommendations offer practical, middle ground achievable enhancements that deliver meaningful improvements • Whilst still effective, the Silver recommendations require less investment and organisational change within the Civil Maintenance department
Bronze	• The Bronze tier recommendations are more modest in scale and offer low-effort wins that can be actioned quickly and help build internal capability within the organisation • These recommendations require no external capital investment

The Civil Maintenance department is currently implementing the silver-level recommendations but remains focused on continuous improvement, with the goal of achieving the gold standard.

Adoptions

The Adoptions section outlines the initiatives, technologies, and process improvements the Civil Maintenance department has introduced to address operational challenges and improve outcomes for the community.

The initiatives included here are those expected to deliver the greatest value. As the department's maturity grows, these adoptions may be expanded or complemented with additional innovations to further improve efficiency and service delivery.

Targeted training	The Civil Maintenance department has commenced targeted training for all crews, delivered by subject matter experts, to ensure work is completed consistently and to the highest possible standard.
Capital investment	The department has made significant investments to upgrade sections of unsealed road previously deemed unmaintainable due to challenging location and terrain. These upgrades are expected to reduce community disruption, lower ongoing maintenance needs, and extend the road's useful life.
Investigating optimised systems	The department has commenced process mapping to identify the most efficient systems for its needs. Once implemented, these optimised workflows will streamline operations, eliminate inefficiencies, and improve productivity across the entire department.
Proactive maintenance trial	The Unsealed Roads team have tasked one of their graders to proactively maintain 135km of the unsealed road network. The team will monitor the results and could expand this approach to cover a larger portion of the network.
Fleet improvements	The Drainage team have invested in a second flip screen which is used to filter drainage waste on site. This acquisition will improve the efficiency of the drainage team and reduce waste disposal costs.
Investigating additional plant	The department is exploring the addition of a heavy compaction roller to the unsealed road fleet. Early assessments suggest that this equipment could significantly enhance maintenance quality, delivering more durable road surfaces and extending their useful life.

Next steps

The Civil Maintenance Review sets a clear path for the department's continued growth and improvement.

Guided by a commitment to continuous improvement, the team will monitor progress, adapt to changing conditions, and stay attuned to the needs of the community.

This proactive approach will ensure the department delivers high-quality, efficient services while remaining ready to embrace future opportunities and innovations.

These next steps will include:

1. Track and evaluate the progress of current initiatives
2. Engage with the community to understand changing needs
3. Introduce new strategies and processes as the department matures
4. Stay informed on industry innovations to guide future improvements

Acknowledgments

The development of this Civil Maintenance Review has been made possible through the contributions and insights of many individuals and groups. The department acknowledges and thanks:

- Staff – for their time, expertise, and dedication to delivering quality services to the community.
- Councillors – for their ongoing commitment to improving local infrastructure and their support for the department's work.
- Ninety Mile Consulting – for their support in facilitating engagement, conducting analysis, and co-designing this review.

Cardinia Shire Council
Civic Centre
20 Siding Avenue, Officer

PO Box 7
Pakenham 3810

Phone: 1300 787 624
Email: mail@cardinia.vic.gov.au
Web: www.cardinia.vic.gov.au

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