Government of Western Australia
Department of Transport
and Major Infrastructure

Empowering a
thriving community

BASSENDEAN SAFE ACTIVE STREET

Final Route-Level Evaluation Report

Acknowledgement of Country

The Department of Transport and Major Infrastructure acknowledges the Traditional Custodians of the land throughout Western Australia and pay our respects to Elders past and present.

We acknowledge the members of all Aboriginal communities, their cultures and continuing connection to Country throughout the State.

About this report

Alternative formats

This publication is available in alternative formats upon request. Contact us to request a copy or submit an enquiry.

Contact

Department of Transport and Major Infrastructure

140 William Street
Perth WA 6000

Website: transport.wa.gov.au/safeactivestreets

Email: activetransport@transport.wa.gov.au

Contents

SAFE ACTIVE STREETS PILOT PROGRAM

The Department of Transport and Major Infrastructure (DTMI) worked with local governments between 2015 and 2023 to develop, trial and evaluate safe active streets (SASs).

SASs use local area traffic management treatments to reduce car speeds to 30 km/h and create environments that encourage more people to walk, wheel and ride in their communities.

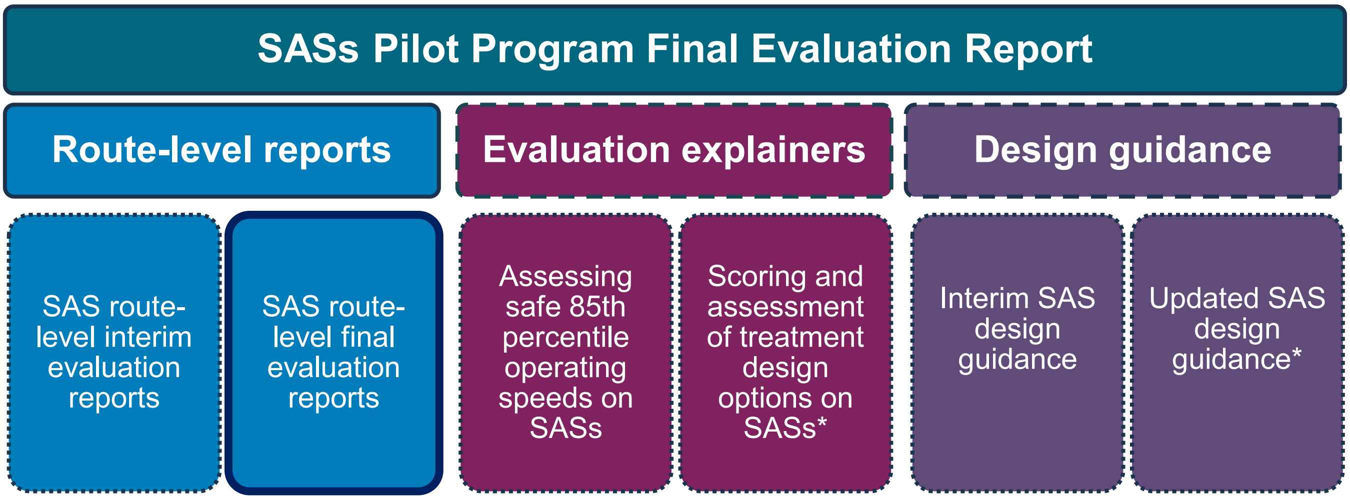
The SASs Pilot Program in Western Australia (WA) was motivated by research which showed that a fear of sharing the road with motor vehicles was a key barrier to many people riding bikes more often. Local research, including a large community-wide cycling survey undertaken in 2015 by the Royal Automobile Club of WA[1] and the 2015 Auditor General's Report into Safe and Viable Cycling,[2] highlighted the need for quieter and more comfortable local bicycle routes to remove barriers to active transport and the perceived lack of safety on local roads.

An evaluation plan and framework were established to test whether redesigning a street using traffic management treatments could reduce vehicle volumes and speeds, leading to increased active travel, and positive community sentiment towards the SAS.

Evaluation document suite

This document forms part of the SASs Pilot Program Evaluation. It provides a summary of results across three key change indicators for one of the nine evaluated projects, and a discussion of how the route performed overall.

The results outlined in this final route-level report should be read in conjunction with the SASs Pilot Program Final Evaluation Report,[3] and other supporting material including methodology explainers and SASs design guidelines.



Suite of interrelated documents to be read in conjunction with the Bassendean SAS final route-level report

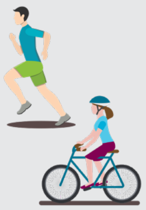
---

[1] RAC – WA, 2015. RAC Cycling Survey: 2015. Royal Automobile Club of WA, Perth, WA.
[2] OAG – WA, 2015. Western Australian Auditor General's Report: Safe and Viable Cycling in the Perth Metropolitan Area. Office of the Auditor General, Perth, WA.
[3] DTMI, 2026. Safe Active Streets Pilot Program – Final Evaluation Report. Prepared by the Department of Transport and Major Infrastructure. Perth, WA.
* Document to come.

TOWN OF BASSENDEAN SAFE ACTIVE STREET

Executive summary

The 2.3 km Whitfield Street SAS route connects Guildford Road to Sandy Beach Reserve via Bassendean Town Centre, Palmerston Square and Bassendean Primary School. Consultation, design and delivery spanned three years between 2018 and 2021.



This SAS route generated broadly positive outcomes.

Design treatment changes that influenced vehicle volume and speed reductions on the Bassendean SAS contributed to positive road safety outcomes across the route. This saw increases in rates of active travel along the SAS and positive sentiment from the community.

Key project insights

The design treatments and measures applied on the Bassendean SAS led to positive results for user behaviour and community sentiment. Design changes, particularly those leading to speed reductions on the SAS, contributed to a positive road safety experience across the route.

Vehicle volumes and speeds were reduced on the route, with speeds lowered to well within the preferred operating range: 32.1 km/h to 38.1 km/h. The regular placement (80-100 m apart) and combination of raised intersection plateaus and slow points as traffic calming measures, and the formalising and alternating on-street parking, appear to have contributed to these decreases.

Vehicle speeds were also reduced on an intersecting local distributor road, due to speed humps installed on approach to the SAS route, which enhanced legibility and awareness of the SAS priority.

Bike riding increased on the SAS after construction, with decreases on neighbouring streets, indicating a switch for riders to use the SAS. Growth in riding shows that design features to reduce vehicle speeds and volumes to create a safe shared space were enhanced when riders became aware of the route and its improved connections to key destinations.

Walking activity increased on the route to a similar proportion as control streets, with walkers equally as likely to choose the route over surrounding streets.

It is therefore possible that the SAS route influenced area-wide trends, with area-wide increases in walking, or contributed to already heightened walking activity in the area following a Your Move behaviour change program delivered two years earlier, indicating the potential for co-attribution. Nevertheless, overall increases in walking on the SAS route, with clear improvements to 'connectivity', was seen in design scores across the route, supporting the importance of route selection in planning for an SAS.

Crash patterns enroute and off route showed strong overall SAS performance in supporting the safety of vulnerable road users, with no incidents occurring enroute before, during or after construction, and no incidents occurring on surrounding roads after SAS delivery from a baseline of three incidents.

The SAS received highly positive responses from the community with notable appreciation for improved amenity, legibility and wayfinding, and feelings that the SAS promoted safer vehicle movements and provided a safe route to walk or ride, particularly to school.

The strong positive sentiment was likely impacted by consistent incorporation of activation, consultation and evaluation (ACE)[4] principles throughout all phases of project planning, design, delivery and post construction review, including alignment of SAS delivery with the Your Move behaviour change program.

Program insights

The SASs Pilot Program was successful in trialling a new approach to road safety and active transport on suburban streets. The program has attracted national and international interest, and the SAS concept is being taken up by local authorities in WA and across Australia.

The SASs Pilot Program Final Evaluation Report detailed the rich array of insights generated through the pilot program, which provide context and relevance to the following individual project key insights and recommendations.

Theory of change supported

- Combining comprehensive physical interventions with a posted speed limit of 30 km/h: increases active travel (walking and bike riding).
- Reduces vehicle volumes and speeds, making streets safer for all users.

Effective design features identified

- Road width narrowing and traffic calming treatments spaced every 80–100 m: these measures physically slow vehicles and change vehicle direction, leading to:
  - lower traffic volumes and speeds
  - increased bike riding and walking.

Critical drivers of benefit realisation determined

- Route selection: must form a direct or indirect connection to key attractors (activity centres, shops, schools, stations, recreation areas) and form part of the long-term cycle network (LTCN).
- Design features: narrowed road widths and treatments 80–100 m apart.
- Cost efficiency: projects costing $600,000 – $1.2 million per km likely achieve a benefit cost ratio (BCR) >1, if the above conditions are met.

Application of ACE principles is essential

- Activation: built infrastructure reflects social needs and the desires of people who will use it.
- Consultation: engagement integrated throughout the project lifecycle is a form of activation and enables community consultation.
- Evaluation: impact measured against anticipated outcomes.

Application of results into future program delivery

The SAS Design Guidance[5] summarises the range of measures that can be applied and the key factors that have been found through this pilot program to influence user behaviour positively. These principles and guidelines will help local governments and practitioners plan and activate routes, consult with impacted communities and evaluate outcomes, whilst considering the application of design treatments and measures appropriate to their local context.

[4] DTMI, 2023. WA Bicycle Network Grants Program: WABN Grants Program Resources - Activation, Consultation and Evaluation (ACE) Guidance. Department of Transport and Major Infrastructure. Perth, WA.
[5] DTMI, 2025. Planning and Designing for Active Transport: Safe active street design guidance. Prepared by the Department of Transport and Major Infrastructure. Perth, WA.

PROJECT OVERVIEW

The 2.3 km Whitfield Street SAS route connects Guildford Road to Sandy Beach Reserve via Bassendean Town Centre, Palmerston Square and Bassendean Primary School.

The route starts at the Guildford Road intersection of West Road as a shared path along the northern side of Bassendean Shopping Centre. The route transitions on Whitfield Street and travels in a southerly direction towards the cul-de-sac at Watson Street. It continues along Whitfield Street to a cul-de-sac at Sandy Beach Reserve. There is a section of shared path on Villiers Street which allows people to connect into West Road and to the shared path travelling south, to connect directly into the path at the Pilgrim Trail.

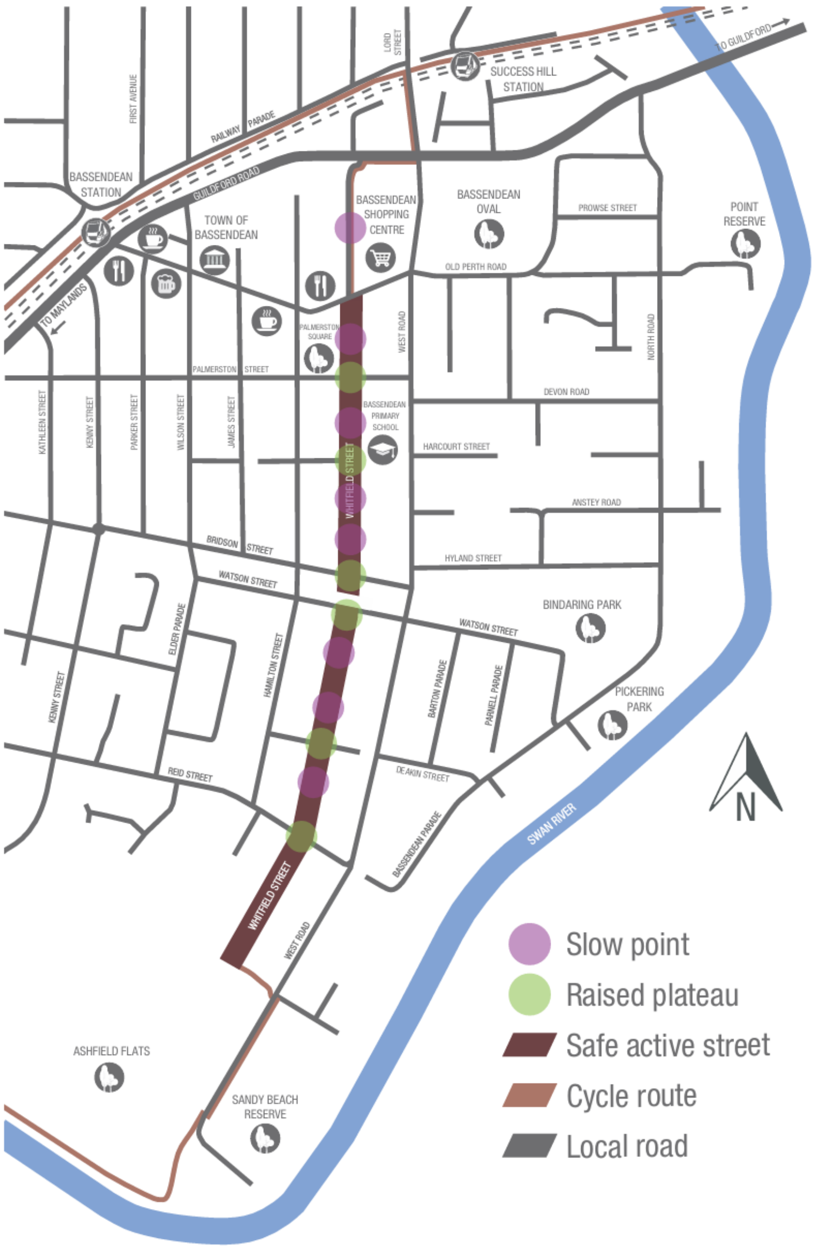
Town of Bassendean SAS project map

Key route destinations

- River foreshore paths (Swan River) and recreation areas
- Sandy Beach Reserves
- Bassendean shopping centre
- Bassendean oval
- Bassendean and Success Hill railway stations and Principal Shared Path (PSP)
- Bassendean primary school
- Palmerston square
- Ashfield Flats

Unique design features

- Raised intersection plateaus
- Formalised parking bays
- Single slow lane points
- Enhanced landscaping and additional trees
- Priority intersections allowing continuous movement
- Road humps on intersecting streets
- Improved curb connections between street and paths
- Amenities including bike repair stations, water fountains, rest areas and wayfinding signage
- New shared path connecting Whitfield Street cul-de-sac to Sandy Beach Reserve and Nature Play space.



Bassendean SAS route map

Timelines

Delivery

- Community consultation: 2018
- Construction: June-November 2020
- Lines and signs completion: December 2020
- Official opening: January 2021

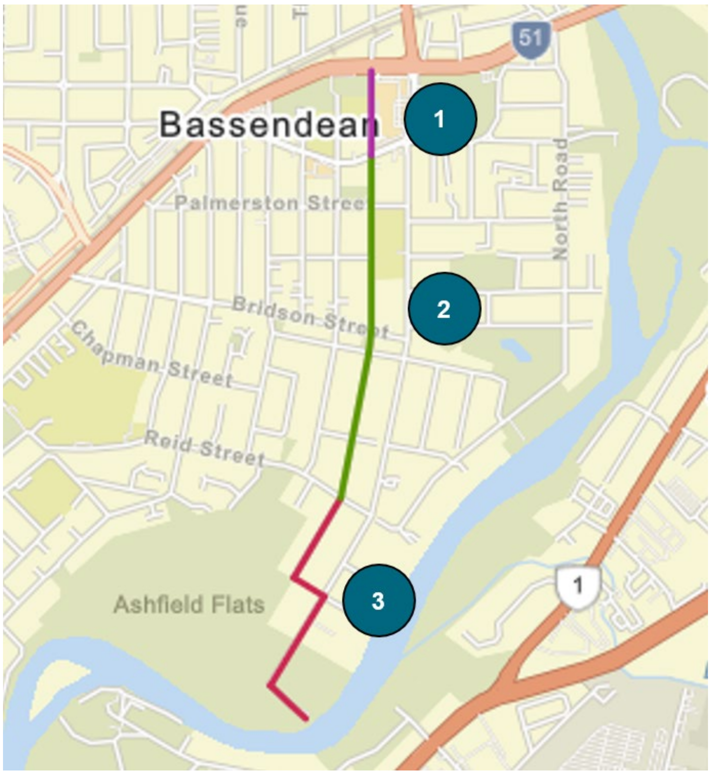
Evaluation:[6]

- Pre-construction data collection (user behaviour): May 2018
- Post-construction data collection (user behaviour): May 2021 and May 2022
- Post-construction data collection (community sentiment): October-November 2022
- Interim evaluation report: 2023
- Final evaluation report: 2026

Segments

For monitoring and analysis, the SAS was split into 'segments' based on differences in form of the existing route and treatments applied during delivery of the SAS. This route was separated into segments as follows:

1. Whitfield Street (Guildford Road to Old Perth Road)
2. Whitfield Street (Old Perth Road to Reid Street)
3. Whitfield Street (Reid Street to Sandy Beach Reserve)



Map of the Bassendean SAS route showing 'segments' used for data analysis

[6] Notes: The Town of Bassendean worked with DTMI in 2019 to deliver the Your Move Community Program across the whole local government area, including the SAS route. Pre-construction SAS data was collected in 2018, and although post-construction SAS data collection was undertaken two and three years after the behaviour change intervention, it is possible that some user behaviour changes were affected by co-attribution.

Between data collection periods, city-wide travel patterns were disrupted by COVID-19 lockdowns. The post-construction SAS data collection periods, however, were chosen because DTMI's network monitoring indicated they were much less affected by these disruptions. Any remaining impacts are expected to have influenced both the treatment (SAS) and control streets equally.

WHY WE COLLECT DATA

Evaluating a project by collecting data on people's behaviour and sentiment helps us to determine:

- whether the aims of a project have been achieved
- what combinations of interventions were most effective
- whether further improvements could still be made to improve outcomes.

These insights help to guide infrastructure investment in local communities that support the growth of active transport.

SASs Pilot Program

The SASs Pilot Program trialled unique combinations of design features that reflected local community needs and contexts, while also complementing each local government's approach to building an integrated active transport network.

Nine SAS projects, including this one, were included in the evaluation study. For more information on the evaluation methodology, theory of change, and overall program insights see the SASs Pilot Program Final Evaluation Report.

Project aims

The following aims were investigated for each project included in the evaluation study, and results were compared across projects to derive program level insights that could lead to improvements in design guidelines and future SAS delivery.

1. Reduce motor vehicle numbers
2. Reduce 85th percentile speeds to within acceptable operating thresholds[7]
3. Increase the number of riding and walking trips made throughout the week
4. Increase the number of people of all ages and abilities making local trips by riding and walking
5. Influence user, resident and wider community perceptions of SAS routes as safe and comfortable places to walk, wheel and ride.

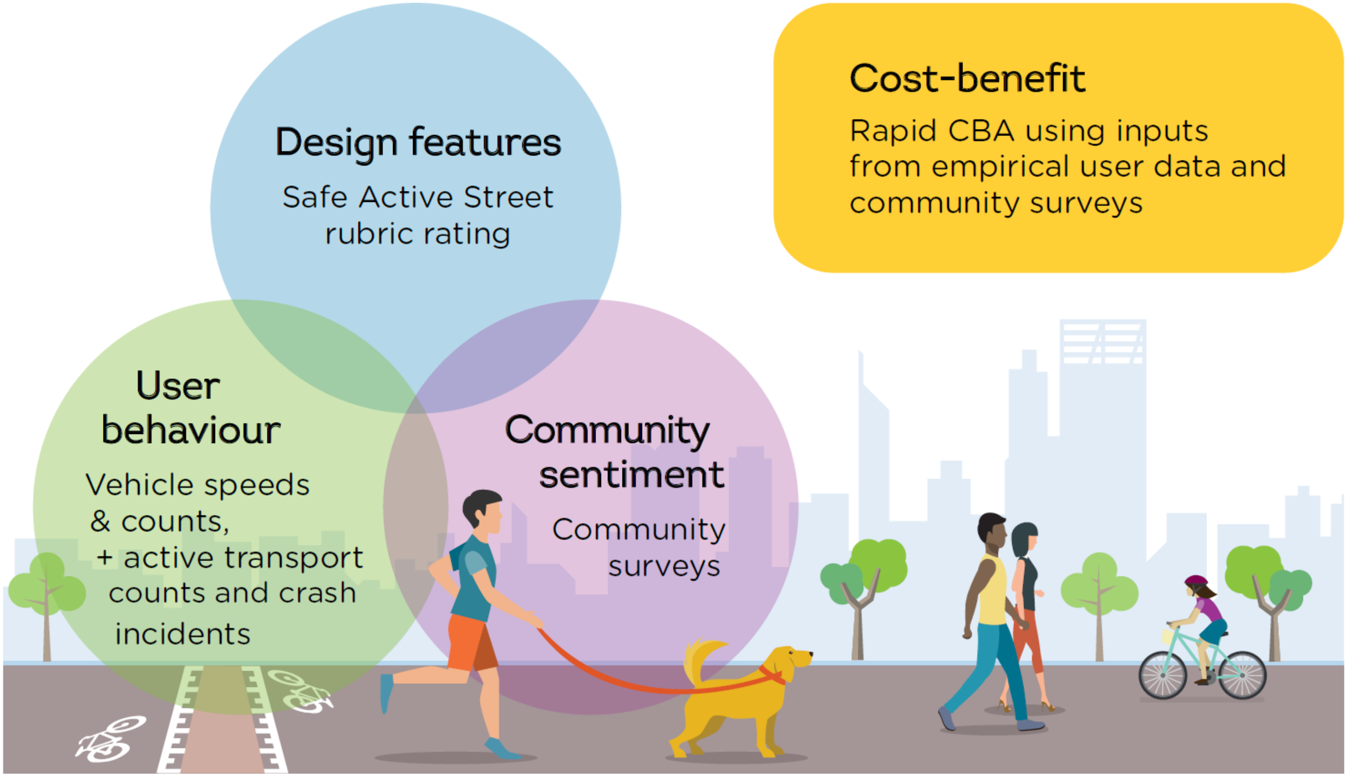
Evaluation framework

A comparative impact evaluation methodology was developed to collect and analyse data on three key change indicators for each SAS:

- **Design features** – scores to quantitatively differentiate between the types and scale of features, treatments and supporting measures applied to the route.
- **User behaviour** – vehicle counts and speeds (using pneumatic tube surveys), and active travel counts (using video surveys), collected pre- and post-construction. Small samples of available crash data were reviewed and discussed at the project level only, to aid interpretations of other data.
- **Community sentiment** – qualitative data on sentiment and perceptions, collected via community, resident and user surveys post-construction.

[7] DTMI, 2026. Planning and Designing for Active Transport: Explainers - Assessing 85th percentile speeds on safe active streets. Prepared by the Department of Transport and Major Infrastructure. Perth, WA.

At the program level, the evaluation framework included a fourth key indicator: cost benefit. The [SASs Pilot Program Final Evaluation Report] includes discussion of outputs from a cost benefit analysis conducted on data from each of the nine evaluated projects and provides a summary of the factors that influenced whether a project received a BCR >1, indicating a positive return on investment.



Data sources for each safe active street key indicator, illustrated to show theoretical interactions

OUTCOMES

Design features

Evaluation of the design features applied on each SAS route was a complex task due to the wide range of measures and treatments available, which could be chosen to influence different unique, yet complementary effects on user behaviour and community sentiment.

Assessment rubric

To assess the types and scale of treatments and supporting measures applied in each pilot project, a consistent scoring rubric and guidelines were developed for the SASs Pilot Program, which required a group of invited transport engineers and planners to agree on scores during focus group sessions.

Twenty-one criteria were identified across five design categories:

1. Active transport infrastructure
2. Connectivity
3. Traffic calming
4. Parking bay infrastructure
5. Placemaking and legibility.

Through facilitated consultation, design scores (0-4) were determined, where scores reflected the degree of improvement applied for each criterion per route segment assessed. Total average scores per route segment and category (grouping of criterion) could then be interpreted as:

<1 = minimal improvements	1-2 = moderate improvements	2-3 = major improvements	>3 = substantial improvements

Results

Table 1 provides a breakdown of scores per route segment and design category.

Overall, the route averaged a design score of 1.97, indicating moderate improvement was achieved across the whole route.

- The route score was brought up by substantial improvements to ‘connectivity’, which is an indication of suitable route selection.
  - The route provided a critical link to key local destinations including the Hawaiian Shopping Centre and railway line (station and PSP) at the northern end, Sandy Beach Reserve at the southern end, and local school enroute.
  - The SASs Pilot Program Final Evaluation Report determined that route selection is a critical driver of benefit realisation, with direct influences on current and latent demand.
- Scores for ‘parking bay infrastructure’ were major, with informal parking replaced with embayed parking on both sides of the road on segments 1 and 2, but not segment 3.
  - The SASs Pilot Program Final Evaluation Report determined that consistent use of formalised ‘parking bay infrastructure’ had a motor traffic calming effect by narrowing the road carriageway and should be considered as a supportive design feature for the goal of reducing vehicle volumes and speeds.
- Scores for ‘placemaking and legibility’ were also major, due to the use of red asphalt and landscaping enhancements which added to the route’s attractiveness and user awareness of the SAS.

- Scores for 'active transport infrastructure' were moderate, with minimal improvements to footpath infrastructure along the route, and lack of SAS priority on segment 1 due to priority given to shopping centre traffic management.
- Scores for 'traffic calming' were moderate, mostly brought down by the minimal treatments applied on segment 3.
  - This segment was delivered as 300 m of road to a cul-de-sac then connection via an existing shared path to the Sandy Beach Reserve. On the road component of segment 3, no parking bays, narrowed slow points or road humps were installed, possibly because it was considered unlikely to be impacted by fast vehicle speeds and would only be used by local traffic.
  - Segment 2 of the SAS route scored major for 'traffic calming' as this was where most of the new treatments were applied.

Table 1: Design scores per category, segment and overall for the Bassendean SAS route*

Segment	Active transport infrastructure	Connectivity	Traffic calming	Parking bay infrastructure	Place-making and legibility	Total*
Segment 1: Whitfield St (Guildford Rd to Old Perth Rd)	1	3.33	0.71	2.5	2.6	**1.76**
Segment 2: Whitfield St (Old Perth Rd to Reid St)	1.75	3	2.71	3	3.4	**2.76**
Segment 3: Whitfield St (Reid St to Sandy Beach Reserve)	3	2.67	0.57	0.5	2	**1.38**
Overall average route score	**1.9**	**3**	**1.33**	**2**	**2.67**	**1.97**

*Total average scores per segment and category can be interpreted as: <1 = minimal improvements, 1-2 = moderate improvements, 2-3 = major improvements, >3 = substantial improvements.

Examples of applied design treatments

Combinations of treatments: formalised parking, tree plantings, blue patch

Filtered permeability and wayfinding at transition to road closure

User behaviour

Evaluation of user behaviour followed a comparative impact approach, with before-after, control-intervention (BACI) data collection design.

Data collection design

A BACI data collection design was applied to differentiate between the effects of interventions applied on the treatment route and changes that may have occurred 'naturally' in the surrounding area. Data was collected before construction at carefully selected sites on the SAS (treatment) and at comparative sites on similar nearby streets (control) and repeated at the same sites after construction at consistent times of the year to minimise influence of seasonal variation.

With a BACI design, traffic and movement flow on control streets did not need to match with treatment streets, and an appropriate an analysis of change (odds ratio) was determined.

Odds ratio analysis

To assess changes in counts of vehicles, walkers and bike riders on the treatment compared to control routes, a statistical measure of probability was applied known as an 'odds ratio', which compares the odds of an outcome occurring in one group to the odds of it occurring in another group (regardless of differences in raw counts across groups).

Odds ratios were used to estimate whether the outcomes observed on the SAS route were likely attributable to the SAS, unlikely attributable, or consistent with trends observed on the control streets.

Scores range from 0-2 and sometimes higher, with scores >1 indicating higher odds of the treatment influencing the outcome and scores <1 indicating decreased odds. It is common, however, that during interpreation of results, a middle range is determined that indicates a neutral or indeterminate result. During analysis of the SAS user behaviour data, a middle range of 0.93 and 1.08 was determined as neutral change or change on the SAS that was consistent with trends observed on the control routes.

Assessing 85th percentile speeds

It was not suitable to apply odds ratios for 85th percentile speeds because the posted speeds were intentionally reduced on the SAS route. Instead, a method was developed specifically to assess the effectiveness of the lowered speed limits and changed street conditions of SAS routes on driving behaviour, through which DTMI identified an acceptable operating range and upper bound for 85th percentile speeds. For more information, see the supporting document: [Assessing Safe Operating Speeds on 30 km/h Streets].

Calculating average daily results

Vehicle counts and speeds were detected across 14 consecutive days, including weekdays and weekends, at consistent seasonal and temporal periods before and after SAS construction. Active transport counts were detected across three weekdays and one weekend day, at consistent seasonal and temporal periods before and after SAS construction.[8]

Data collection periods were carefully selected to avoid local area events, public holidays and school holiday periods. If collection technology failed, samples were repeated immediately.

Calculations of average daily results were undertaken by:

i. averaging the available weekday and weekend data per collection period
ii. applying weightings for the number of weekday and weekend days per week
iii. adding the result to determine average weekly activity
iv. dividing by seven to achieve an average daily estimate.

This method was applied to achieve consistency across the available dataset, and smooth out any day-of-the-week fluctuations that may have occurred. In this way, data between control and treatment sites, and across SAS locations could be compared consistently.

---

[8] This SAS underwent a repeat of post-construction sampling, which showed durability of the post-construction results. To streamline reporting, the data of both periods were combined and averaged.

Vehicles

Method

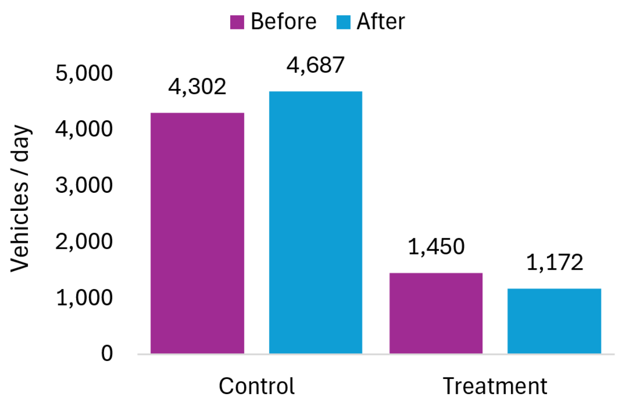
Pneumatic tube counters were used to detect vehicle traffic volumes and speeds. They were placed at strategically selected midblock locations on the SAS route (treatment) and comparable locations on adjacent streets (control). Segment 3 was not sampled for vehicle movements as it largely consisted of shared path upgrades. Depending on segment length, between 1 - 4 counters were placed on each.

Results

Vehicle volumes - overall

- Vehicle counts reduced on the treatment route (-19 per cent) and increased on control streets (+9 per cent), indicating that the treatments applied were effective in encouraging drivers to switch to alternative routes.
- Comparing changes on the treatment and control routes, the odds ratio generated a high score of 1.26, **indicating the SAS was likely responsible for the decreases observed enroute**.

Figure 1: Bassendean – average daily vehicles

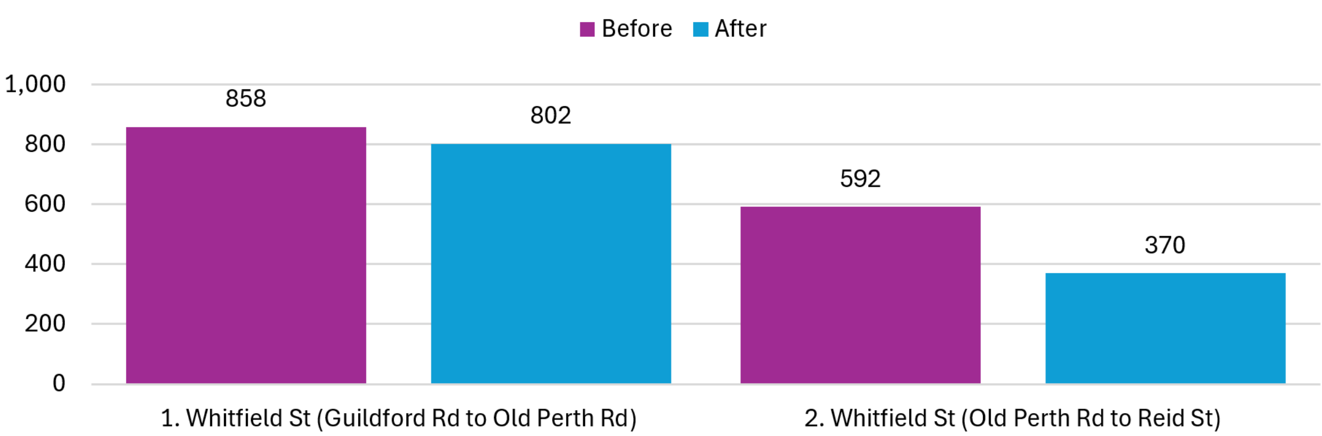


Vehicle volumes on the SAS decreased compared with increases on control streets. The odds ratio indicated the decrease in vehicle volumes on the SAS route after construction was likely attributable to the SAS when compared with trends on control streets.

Vehicle volumes – segment comparison

- Vehicle volumes reduced on segments 1 and 2.
  - Greater decreases were observed on segment 2, between Old Perth Road and Reid Street, which includes access to the primary school and suggests probable reductions in vehicle use for student pick-ups and drop-offs.
  - Reductions on segment 1 were notable as vehicle access to the shopping centre was retained.

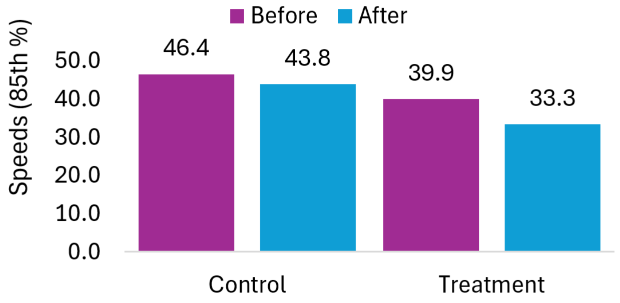
Figure 2: Bassendean – average daily vehicles on SAS segments



Vehicle speeds - overall

- A reduction in 85th percentile vehicle speeds (~6 km/h) was observed on the treatment route, with the resultant speeds well within the preferred operating range for an SAS route: 32.1 km/h to 38.1 km/h.
- This was achieved through features such as formalised parking bays to narrow the carriageway, narrowed slow points and some raised intersection plateaus. Road humps were installed on segment 1 and some on cross-streets.

Figure 3: Bassendean – 85th percentile speeds

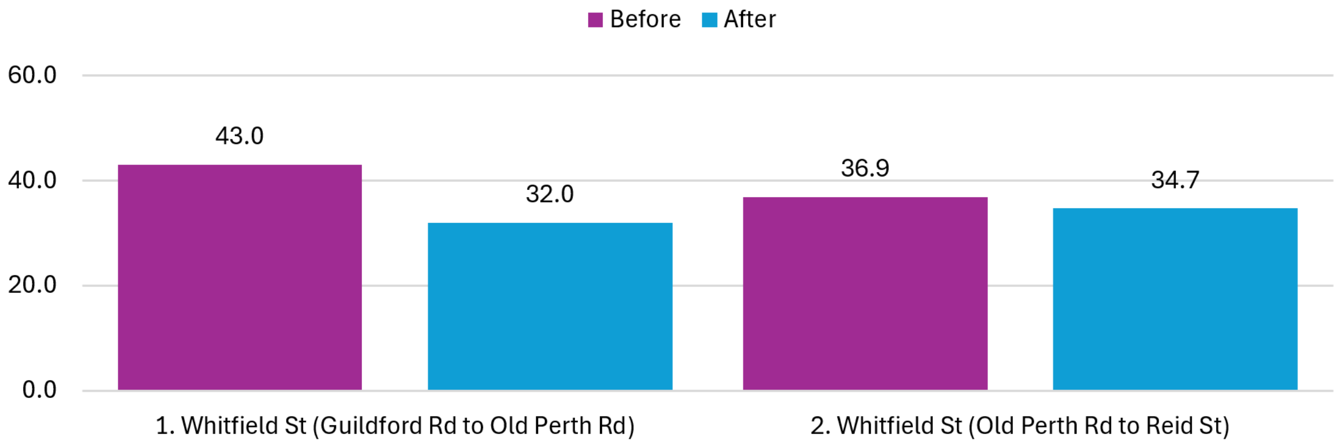


This result indicates good overall SAS performance in supporting the safety of vulnerable road users by sufficiently lowering the fastest vehicle speeds, with some variability across the route.

Vehicle speeds – segment comparison

- 85th percentile vehicle speeds recorded decreases on segments 1 and 2, most notably on segment 1 which retained vehicle access to Bassendean Shopping Centre.
  - Although this segment scored minimal for 'traffic calming' with only a single road hump installed, it scored major for 'parking bay infrastructure', and it's likely the additional side friction from parked cars and access to off-street parking contributed to the speed reduction.
  - The average 85th percentile speeds on segment 2 were within the preferred operating range for an SAS route before construction and lower again after SAS delivery. This segment scored major for 'traffic calming' and substantial for 'parking bay infrastructure', which seemed to have encouraged the maintenance of preferred vehicle speeds in addition to reducing the overall vehicle movements.
    - This is an important outcome to take note of, because on some other SAS routes where vehicle numbers were reduced, the fastest speeds either increased or were not suitably lowered.
    - The SASs Pilot Program Final Evaluation Report determined that spacing of treatments 80-100 m apart was a critical driver of reduced vehicle volumes and speeds and thus impacted benefit realisation.

Figure 4: Bassendean – 85th percentile (fastest) speeds on SAS segments



Additional insights - vehicle volumes and speeds on mid-route intersecting road

- The Bassendean SAS intersects with a local distributor road, Reid Street. The SAS priority is retained, providing SAS users with the right of way to continue through this intersection.
  - As the intersection priority was changed to prioritise the SAS movements, concerns emerged through community and local government consultation that some vehicles moving along Reid Street may not realise nor slow sufficiently to give way.
  - It was decided to provide two raised plateaus on Reid Street, 30 - 60 m on approach either side of the intersection with the SAS route.
  - Reduced speeds on the cross-street could support SAS intentions of attracting walkers and riders.
- Data for vehicle volumes and speeds was collected on approach to the SAS, to determine whether the additional road humps impacted drivers' use of this local distributor road and whether 85th percentile speeds were reduced to sufficiently slow drivers as they approached the 'changed priority' give way, intersection with the SAS.
- Data showed that after construction of the SAS route:
  - Daily volumes increased on this local distributor road, possibly due to diverted traffic off the SAS.
  - 85th percentile speeds were reduced, although posted speeds on Reid Street remained at 50 km/h.
- These results show that the addition of road humps on approach to the changed priority intersection with the SAS route was successful in reducing vehicle speeds. As such it can be inferred that drivers became more aware of the SAS route, and that a safe connection for people walking and riding was supported by this initiative.

Figure 5: Reid Street, on approach to the SAS – average daily vehicles

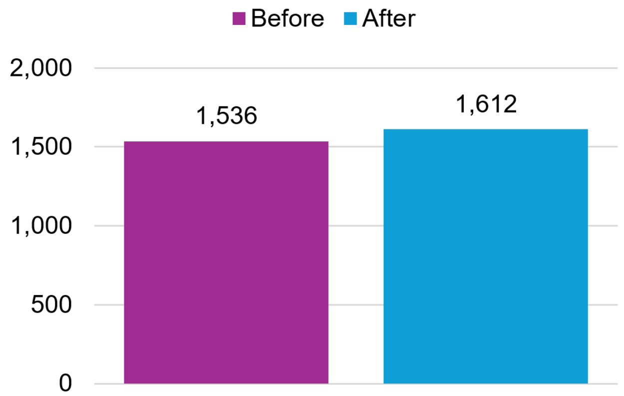
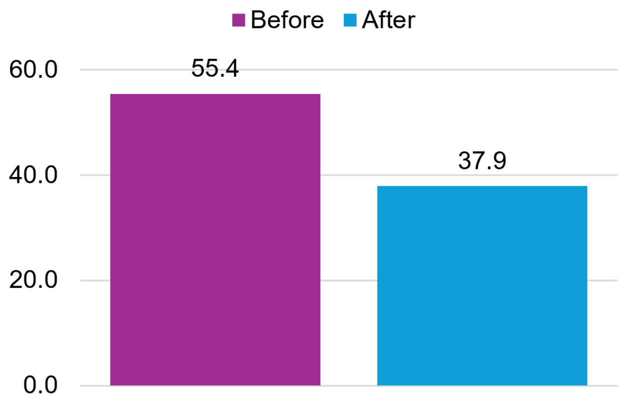


Figure 6: Reid Street, on approach to the SAS – 85th percentile vehicle speeds



Active transport

Method

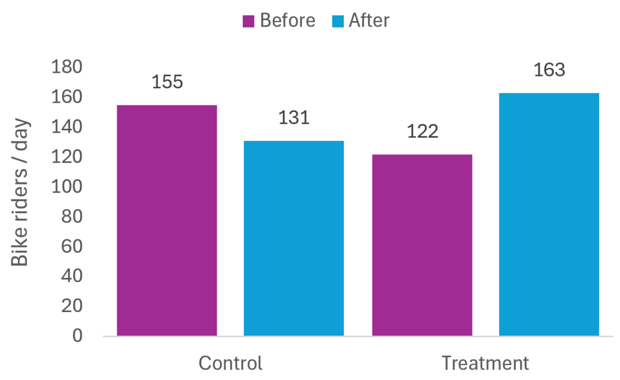
Video surveys were used to detect rates of active transport. Video cameras were placed at strategically selected intersections on the SAS route (treatment) and comparable locations on adjacent streets (control). Segment 3 was sampled for active travel, though it largely consisted of shared path upgrades. Depending on segment length, between 1 - 4 counters were placed on each.

Results

Bike riding - overall

- Riding activity increased on the treatment route (+34 per cent) and decreased on the control streets (-15 per cent), suggesting the SAS was effective in encouraging riders to switch to using the route.
- Comparing changes on the treatment and control routes, the odds ratio generated a very high score of 1.73, **indicating the SAS was very likely responsible for the increases observed enroute**.

Figure 7: Bassendean – average daily bike riders



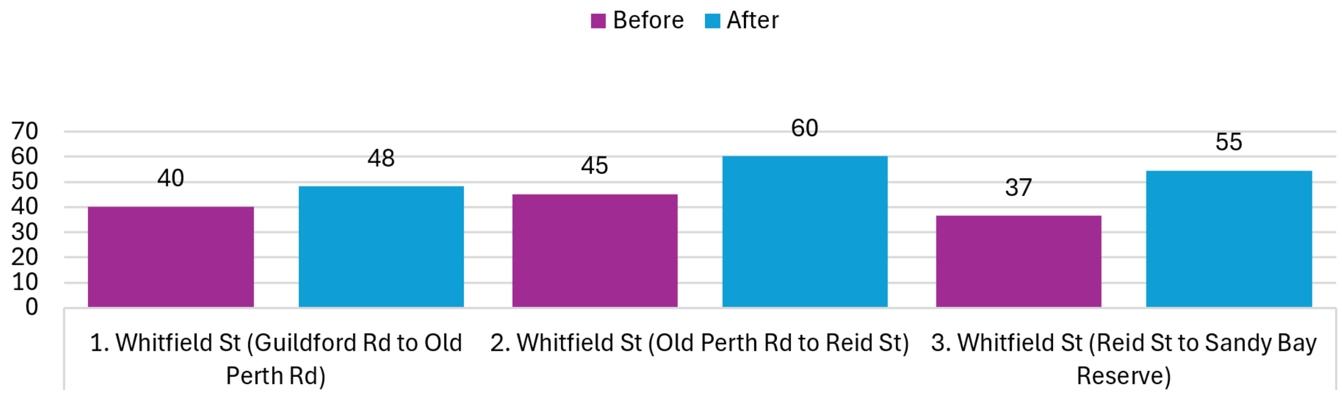
Bike riding activity increased to a large degree on the SAS and decreased on control streets, indicating it was a far more attractive route for bike riders.

The odds ratio indicated the increase in bike riding on the SAS route after construction was very likely attributable to the SAS when compared with trends observed on nearby control streets.

Bike riding – segment comparison

- Daily bike riding activity increased on all route segments, with segments 2 and 3 observing the highest proportional increases compared to segment 1.
  - Segment 2 scored major for design improvements overall, with particular improvement to 'parking bay infrastructure', 'placemaking and legibility' and 'connectivity'. Growth in riding shows design features that reduce vehicle speeds and volumes to create a safe shared space are enhanced when riders are aware of the route and it provides better connections to key destinations.
  - Segment 3 scored moderate for design improvements overall, with particular improvement to 'active transport infrastructure', primarily due to the safe continuous separated shared path connection between the cul-de-sac on Whitfield Street and Sandy Beach Reserve.

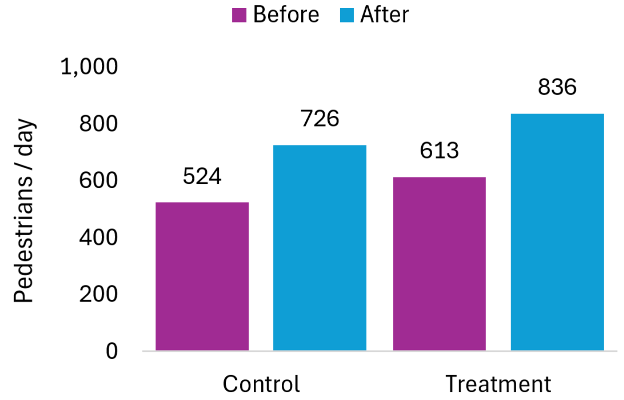
Figure 8: Bassendean – average daily bike riders on SAS segments



Walking – overall

- Walking activity increased on both the treatment route (+37 per cent) and control streets (+39 per cent) to a similar proportion, indicating the potential for area-wide impacts.
- Comparing changes on the treatment and control routes, the odds ratio generated a neutral score of 1.04, **indicating the SAS was likely consistent with area-wide trends**.[9]
- It is difficult to distinguish whether the SAS route influenced area-wide trends, was influenced by area-wide increases in walking, or contributed to already heightened walking activity in the area following a Your Move behaviour change program delivered two years earlier.

Figure 9: Bassendean – average daily walkers



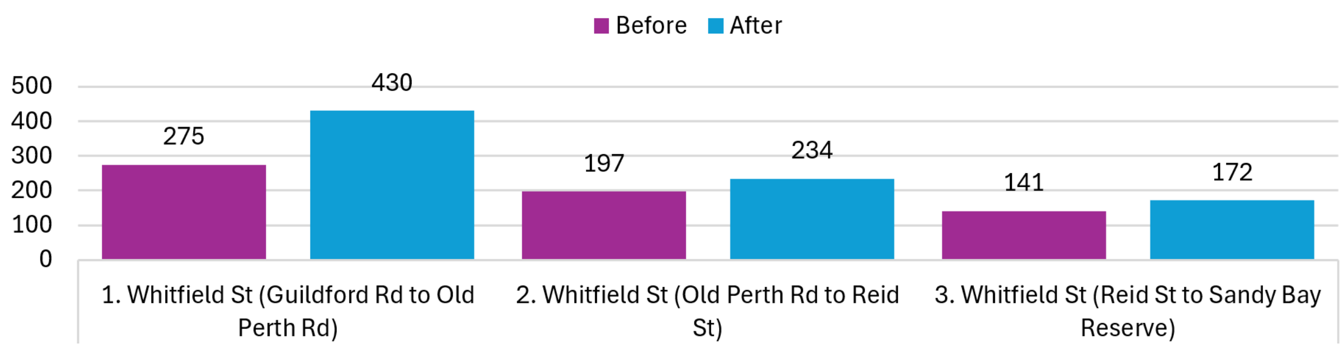
Walking activity increased on the SAS to a similar proportion as control streets.

The odds ratio confirmed that increases in walking on the SAS route after construction were consistent with area-wide trends, suggesting overall walking increased in the area, likely due to the SAS and other factors.

Walking – segment comparison

- All segments observed an increase in walking, with segment 1 recording much higher increases than segments 2 and 3.
  - This is likely related to the substantial increases in 'connectivity' to key destinations on segment 1 of the route, due to the direct connection between the SAS route and Bassendean Shopping Centre, and proximity to other key destinations including Bassendean Oval and the Bassendean train station.
- The overall increases in walking on the SAS route, with clear improvements to 'connectivity' seen in design scores across the route, supports the importance of route selection as highlighted in the SASs Pilot Program Final Evaluation Report.

Figure 10: Bassendean – average daily walkers on SAS segments



[9] Note: The Town of Bassendean worked with DTMI in 2019 to deliver the Your Move Community Program across the whole local government area, including the SAS route. Pre-construction SAS data was collected in 2018, and post-construction data was collected in 2021 and repeated in 2022. With initial post-construction data collected two years after the behaviour change intervention, it is possible that walking behaviour in the area remained heightened following Your Move and was elevated further by delivery of the SAS route, suggesting the potential for co-attribution.

Crash incidents

Additional to the count data collected to assess user behaviour, a review of available crash data provided an indication of safety performance of the road environment before and after implementation of the SAS.

Objective evidence on the number, type and severity of crashes occurring in the area, in light of the changed user behaviour along the route, helps identify whether the SAS treatments have influenced road safety outcomes.

Method

Crash incidents were downloaded from the Main Roads WA data warehouse via Data WA. Eleven years of reported incidents across the State, from 1 January 2013 to 31 December 2023,[10] were available which included midblock and intersections.

Data was filtered to anything involving bike or pedestrian, and geospatially mapped to visualise their location, type and injury severity against the SAS routes.

Sample sizes were low, which limited analysis to a simple visual count. Nevertheless, patterns were assessed alongside the design features of the route and user behaviour count results for vehicles, people walking and bike riders.

Sample sizes in active transport related crash data were typically low due to:

- frequency of incidents being generally low in the specific areas of interest
- the incident dataset only containing medical, hospital, fatal or property damage reports.

Results

Table 2 provides a summary of incidents between vehicles and bike riders or people walking, before, during or after SAS route construction, shown for each stage of the SAS route and corresponding control street locations. Notable data patterns:

- The Bassendean SAS route experienced no crash incidents enroute before, during or after construction.
- There were a few incidents between a vehicle and bike or pedestrian on control streets before SAS construction, and none after the SAS was constructed.

Increases in walking and bike riding on the SAS route does not appear to be related with an increase in crash incidents between vehicles and vulnerable road users.

The reduction in vehicle speeds on the SAS could be related to the maintenance of a zero-crash incident rate enroute. The SAS may in turn have lowered the likely risk of incidents occurring on control streets by attracting bike riders to the SAS and improving driver caution on surrounding streets.

This pattern indicates strongly positive SAS performance in supporting the safety of vulnerable road users.

Table 2: Incidents between vehicles and bike riders or pedestrians, before, during or after SAS route construction

Years of data reviewed[11]	SAS construction status	Crashes on SAS route – Bike	Crashes on SAS route – Pedestrian	Crashes on control street – Bike	Crashes on control street – Pedestrian
7.5 years	Before	Nil	Nil	1 hospital 1 medical	1 hospital
6 months	During	Nil	Nil	Nil	Nil
3 years	After	Nil	Nil	Nil	Nil

[10] Note: At the time of analysis (late 2025), data for 2024 and 2025 was not available to download.
[11] Years of data reviewed reflects the combined total of all available incident data analysed relative to the SAS's construction status. Due to the limited sample size and targeted location, averaging incidents per year was not suitable for this analysis.

Community sentiment

Community sentiment was collected to understand how residents and road users perceived the SAS and how they reported using the street before and after implementation. These insights provide valuable context on perceived safety, comfort and self-reported travel behaviours that cannot be captured through traffic counts alone. Incorporating community perspectives enables a more complete assessment of SAS user experience and helps to inform decisions about future refinement or expansion of the program.

Method

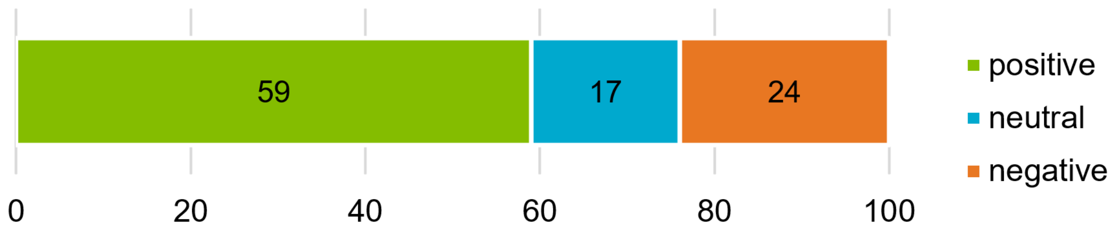
Community surveys were undertaken in 2022, nearly two years following the opening of the SAS. Questions focused on the design treatments and effectiveness in delivering the project objectives, self-reported usage of the route (frequency, trip purpose) and demographics.

Results

Community sentiment and perceptions

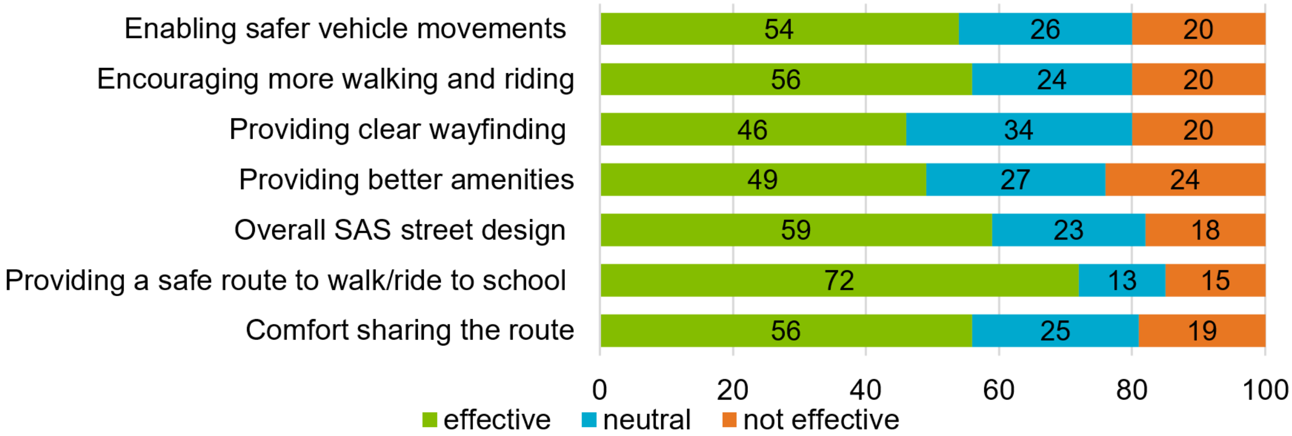
- Community responses towards the SAS were strongly positive overall:
  - **59 per cent** of all respondents reported feeling positive towards the SAS (with 17 per cent neutral).
  - This was one of the largest positive sentiment values compared with other SAS routes and indicates the community were well engaged throughout development of the route and understood the design intentions.

Figure 11: Community sentiment towards the Bassendean SAS (n=162)



- When asked to rate the SAS on effectiveness across several categories, responses were overwhelmingly positive.
  - Sentiment was largely positive towards the overall street design, comfort sharing the route, safer vehicle movements and the SAS providing a safe route to walk or ride, particularly to school.
  - Verbatim responses indicated that improvements could be made to legibility of the route, particularly for drivers unaware of the changed conditions.

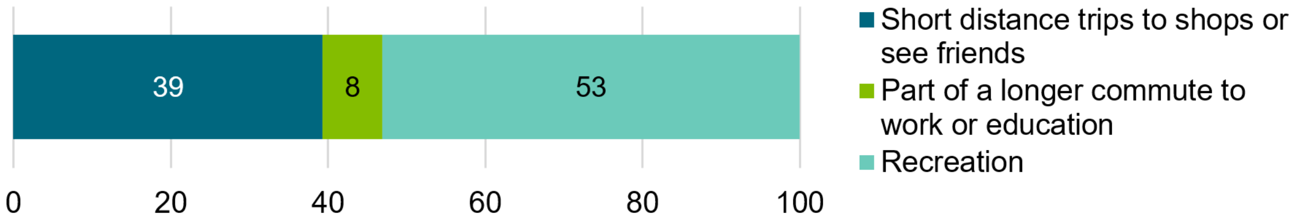
Figure 12: Community perceptions of the SAS (n=162)



Changes in behaviour and trip purpose

- Self-reported changes in behaviour from all respondents were consistent with observations.
  - **33 per cent** = NET increase in active travel
  - **-24 per cent** = NET decrease in vehicle use.
- People who walked or rode a bike along the SAS did so for a mix of reasons, with close to half for recreation and half for transport purposes.

Figure 13: Walking, riding – trip purpose (n=96)



Verbatim responses on what people liked or didn't like about the SAS

Positives

"I feel safe using the road with my kids. It's perfect for them to learn riding and get confident with their bike."

"Encourages friendly neighbourhood interaction. Enhances social fabric and community knowledge on a street block level. It's conducive to a safe active street."

"It seems to have slowed down traffic and made the street safer for cycling. It has increased the value of housing in the area and turned the area into an even more desirable area to live in for families."

"It's reduced the traffic, so there's no hooning up and down the road. It will be nice when the trees get big. It's very family friendly and great for children."

"This street encourages other forms of transport, walking, riding rather than cars. The kids are safer walking to and from school. Encourages considerate road using and encourage consideration towards the community."

"From its intersection with Old Perth Road to the river it feels really safe to use and I really like to use it as a cyclist. Even to take my kids to the school as a pedestrian.

Negatives

"No consideration was given for the volume of traffic into the shops, especially with the direct Old Perth Road access closed. That end is not as well signposted, suffers from parking issues from the adjacent childcare centre, and generally sees no real slowing down from shoppers."

"Not as safe as what it should be. Too many accidents and near misses at corner of Whitfield and Palmerston. Would like to see Stop signs instead of give way on Palmerston."

"I'm a bit cautious when cars coming the opposite way. If they see a cyclist they may speed up to get the 'hole-shot'. Especially around the shopping centre. There are way too many cars parking on both sides at times at the shopping centre end of Whitfield St."

"Some drivers don't give way to pedestrians and show negative sentiments towards people using the street to walk along. I don't feel safe walking with our pram on the street."

"People are still speeding down the street. Parking is hard at school times. Some people don't know when to give way to another car."

SUMMARY OF FINDINGS

Achievements

- Reduction in vehicle volumes along the SAS route.
- Vehicle speeds were reduced to well within the preferred operating range: 32.1 km/h to 38.1 km/h.
  - Vehicle speeds were also reduced on an intersecting local distributor road, due to speed humps installed on approach to the SAS route, which enhanced legibility of the SAS priority.
- There were increases in bike riding activity on the route and decreases on neighbouring streets, indicating a switch for riders to use the SAS.
- Broadly positive community sentiment towards all aspects of the route.
  - This is likely a reflection of the consistent incorporation of ACE principles throughout all phases of project planning, design, delivery and post construction review, which was enhanced by involvement of the local community in the Your Move behaviour change program, delivered in 2019 before SAS construction.
- Crash patterns enroute and off route showed strong overall SAS performance in supporting the safety of vulnerable road users.

Opportunities for improvement

- Walking activity increased on the route, but at a similar level relative to the neighbourhood, with walkers equally as likely to choose the route over surrounding streets.
  - It is possible that the SAS route influenced or was influenced by area-wide increases in walking, or contributed to already heightened walking activity in the area following a Your Move behaviour change program delivered two years earlier, indicating the potential for co-attribution.

Insights and recommendations

Key drivers of success observed in this SAS project and summarised in the SASs Pilot Program Final Evaluation Report:

- Suitable selection of a route which forms a direct and indirect connection to key attractors and is part of the LTCN.
- Lowering 85th percentile speeds consistently across all segments of the route to within the preferred operating range.
- Applying vertical or horizontal deflection treatments 80-100 m apart for maximum benefit realisation and consistent reduction of unsafe speeds.
- Incorporating ACE principles throughout all phases of project planning, design, delivery and post construction review, including alignment of SAS delivery with a community wide Your Move behaviour change program.

Alignment with program insights

By trialling the use of different design features, and collecting data on user behaviour and community sentiment, the nine evaluated projects in the pilot program generated a rich array of insights that will guide future design and development of SASs.

The SAS Design Guidance developed through this trial provides insights for retrofitting brownfield sites but perhaps most importantly, guidance on how to establish an SAS on greenfield sites at inception.

With this guidance and support from DTMI, local governments can design and implement more SASs, creating effective 30 km/h shared street spaces for people to walk, wheel and ride comfortably and safely in their communities.


30