Environmental Data and Report Submission

ISA Data Submission Number: **ISA-0001594**

We have encountered issues with adding the survey on Environment Online as the ISA data was uploaded by an external contractor.

Clearing Area

We have also encountered issues with uploading our shapefiles onto the interactive map on Environment Online. The attachments to this clearing permit application will include a ZIP Folder containing the shapefile.

Kulija Road and Baldivis Road Intersection Upgrade

Road Hierarchy

Kulija Road and Baldivis Road are both regional distributor roads under the City of Rockingham's jurisdiction. Baldivis Road is the main north-south route within Baldivis, providing access to large residential areas in the south and to a developing residential area in the north.

History

Up until 2013, the intersection of Kulija Road and Baldivis Road was a three-way junction (Image 1). Construction commenced in 2013 to extend Kulija Road west to connect to Mandurah Road (Image 2). As a result, the surrounding vegetation at this three-way junction was cleared to construct a four-way staggered intersection (Images 2 & 3). With the completion of this four-way intersection of Kulija Road and Baldivis Road, the City of Rockingham revegetated the cleared areas between 2014 and early 2015 (Image 4).



Image 1. Aerial Map of Kulija and Baldivis Road as a T-Junction in January 2013



Image 2. Aerial Map of Kulija Road and Baldivis Road in construction into a four-way intersection in September 2013



Image 3. Kulija Road and Baldivis Road four-way staggered intersection at completion in August 2014.



Image 4. Kulija Road and Baldivis Road four-way intersection with revegetated batters in February 2015.

Background of Project

The City of Rockingham has received numerous complaints about traffic incidents at the Kulija Road and Baldivis Road intersection. This intersection was ranked the highest-risk intersection in the Perth Metropolitan Area in an RAC member survey in 2025. Rapid subdivision of surrounding areas has led to substantial growth in traffic volume on Kulija Road, which has increased to 20,000 vehicles per day since its construction in 2014. Due to the high traffic volume and the staggered layout of the intersection, a high number of crashes have been recorded, including many of high severity (Image 5). Rear-end and right-angle crashes are common at this unsignalised four-way staggered T-intersection, indicating that drivers are experiencing difficulty when turning from Baldivis Road into Kulija Road (Image 6).

MR Nature	Count	Percentage
Rear End	38	62.3%
Head On	0	0.0%
Sideswipe Opposite Dirn	0	0.0%
Sideswipe Same Dirn	3	4.9%
Right Angle	19	31.1%
Right Turn Thru	1	1.6%
Hit Pedestrian	0	0.0%
Hit Animal	0	0.0%
Hit Object	0	0.0%
Non Collision	0	0.0%
Other / Unknown	0	0.0%
Total:	61	100.0%

Image 5. Traffic data gathered from Main Roads WA regarding the type of crash that has occurred between 2021 and 2025.

Severity	Count	Percentage
Fatal	0	0.0%
Hospital	2	3.3%
Medical	22	36.1%
PDO Major	29	47.5%
PDO Minor	8	13.1%
Other / Unknown	0	0.0%
Total:	61	100.0%

Image 6. Traffic data gathered from Main Roads WA regarding the severity of the crashes that have occurred between 2021 and 2025.

The City of Rockingham, in collaboration with Main Roads WA (MRWA), completed a feasibility study in 2024/2025 and developed five (5) concept options for consideration. The assessment considered factors including heavy vehicle access requirements, future RAV 7 network on Kulija Road, constructability, impacts on existing services, earthworks requirements, environmental clearing, safety, operational performance, and long–term functionality. It was concluded that the best option is to upgrade the intersection to traffic signals, with associated civil works. Subsequent modelling confirmed the need to convert Kulija Road to a dual carriageway (from Mitchell Freeway to the west of the intersection) to accommodate increasing traffic volumes and to upgrade Baldivis Road in conjunction with the signalisation works. The City of Rockingham also intends to upgrade the existing lighting in the project area.

Design Options Considered

1. Dogbone roundabout

A dogbone roundabout was assessed as an alternative; however, it presents several significant constraints. If Kulija Road is considered for inclusion in the RAV 7 network in future, the intersection will need to accommodate vehicles up to 36.5 metres in length. Further design will then be required to facilitate turning movements for these vehicles, resulting in substantial widening of the intersection and increased earthworks and vegetation clearing. Additionally, the significant elevation difference at the intersection is not conducive to the manoeuvring of heavy vehicles. The presence of a high-pressure gas mainline and other underground services on the western side of the intersection would also be affected by the construction of the dogbone roundabout,

resulting in higher construction costs, increased project risks and longer construction timeframes.

2. **Roundabout**

   A typical roundabout was also assessed as an alternative. Similar to the dogbone roundabout, constructing a typical roundabout will affect the high-pressure gas mainline and other underground services on the western side of the intersection, resulting in additional costs, construction complexities, longer construction timeframes and vegetation clearing. It was considered that a standard roundabout will not be able to adequately accommodate RAV 7 vehicles up to 36.5 metres in length, and therefore a future expansion of the roundabout will be required. The significant elevation difference at the intersection will also make it difficult for larger vehicles to safely navigate the road's vertical curve.

3. **Restricted turns**

   Left In Left Out (LILO) turns were considered, with a median constructed completely through the intersection and U-turns at each end. Eastbound traffic is allowed to undertake a U-turn and become westbound traffic, and vice versa; however, this was deemed unfeasible due to the need to maintain the vital connection between Baldivis Road North and Baldivis Road South, safety concerns arising from increased vehicle queuing on Kulija Road, and insufficient gaps between vehicles, which will increase the risk of rear-end and turning-related crashes. Traffic queues are expected to worsen as traffic volumes increase, making this option unsuitable as a long-term solution.

4. **Signalised – realigned layout**

   A realignment of Baldivis Road North and South and signalisation of the intersection was also assessed as an option. Realigning the intersection will require substantial earthworks, extensive reconstruction works, and impacts to existing services. The associated construction costs will be significantly higher than keeping the existing layout with signalisation, and the extensive earthworks will require more clearing of the existing vegetation.

5. **Signalised the existing staggered four-way intersection**

   Signalisation of the intersection will facilitate the safe, sequential flow of various traffic movements. It will future-proof the intersection to accommodate growing traffic in the foreseeable future. Signalisation of the intersection will minimise the project's construction footprint and therefore reduce impacts on underground services at the western verge, vegetation clearing areas, construction costs and time. It was considered the most feasible option and was chosen.

The chosen option



Image 7. Location of project site and extent of the proposed upgrade.

The proposed intersection upgrade of Kulija Road and Baldivis Road (Image 7) is funded by a $7 million commitment from the State Government and must be delivered within the current Government's tenure, by March 2029. The City of Rockingham **expects to commence construction in the second half of 2027** and, upon completion, **will revegetate the cleared areas with species similar to those currently present.**