

# SMK

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21<sup>st</sup> January 2022

### Transport for NSW

PO Box 334  
Level 1, 51-55 Currajong St  
Parkes NSW 2870

Our Ref: 21-367  
Your Ref: DA2021/53

Attention: Alexandra Power

By email: [development.western@transport.nsw.gov.au](mailto:development.western@transport.nsw.gov.au)

Dear Alexandra,

### **Addendum: Erection of a 4.95MW Solar Farm at Wathagar, 2910 Gwydir Highway Moree NSW 2400 (Lot 2 in DP773266)**

This addendum provides additional information to the Transport for NSW to clarify matters outlined in the request for additional information received on the 21<sup>st</sup> of December 2021. This letter aims to address the following items, raised by Transport for NSW:

- *Determine an appropriate treatment for the intersection based on proposed traffic during the development of the solar farm and traffic on the Gwydir Highway*
- *Prepare a design of the intersection if upgrade measures are required.*

### **Second Dirt Track**

A second dirt track entrance has been casually used by some of the employees of the cotton gin. This is an unofficial track into the site that maybe used during dry weather. This track is also used by local farmers to access the cotton gin during the ginning season.

Part of the induction procedures for the solar farm development will include a requirement that personnel and contractors associated with construction and operation of the solar farm will not use this side-track.

## Traffic Assessment Review

All traffic including both trucks and light vehicles involved in construction and operation of the Wathagar Solar farm will enter and exit the site from and to the east. No traffic will be generated in a westerly direction.

Existing traffic related to the cotton gin operation enters and exits the site in both directions. This traffic involves seasonal operations. The cotton gin processes picked cotton between April and normally July of each year, subject to cotton production volumes. The site employs up to 30-staff during the ginning season which generates an estimated 15-light vehicle trips per day. Truck traffic includes delivery of raw lint cotton bales, and despatch of cotton seed and processed cotton bales.

Truck traffic associated with the cotton gin operate for a similar time as the ginning with some minor continuation of traffic after ginning is completed to remove stored product including cotton bales and cotton seed. The following table presents an estimate of daily truck traffic movements whilst the cotton gin is operating.

**Table 1: Estimated Truck traffic during the cotton ginning season**

Traffic Movements	Truck Movements
<b>Seed Cotton deliveries from growers (even spread)</b>	
Round bales per day	288
Trucks per day	16
Note: Assume 2 trailers per trip = 18 round bales	
<b>Lint Trucks to east</b>	
Lint bales per day	1,224
Mote bales per day	2
Trucks per day – Road Trains	4
<b>Cottonseed Trucks</b>	
Tonnes per day	312
Trucks per day	6
Note: Assume Road Train – 50 tonnes	
<b>Total Cotton Related Trucks per day</b>	<b>26</b>

Truck traffic is controlled by weighbridge operations. It normally takes approximately 15 to 20-minutes for a truck to be processed across the weighbridge and therefore hourly traffic rates for approximately 12-hours per day when the weighbridge is open, is in the order of between 3 and 4 trucks per hour leaving the site.

Based on the above assessment, the solar farm may add one additional truck to the peak daily traffic and several light vehicles if the solar farm is being constructed during a cotton ginning season (April – September). The intersection would therefore have a total of 27-two-way truck movements per day under worst case scenarios.

The largest truck using the site will be a two trailer road train.

## Intersection Survey, Review and Design

The intersection has been assessed in accordance with the Safe System Assessment Framework adopted in the Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings. The following table presents a summary of this assessment:

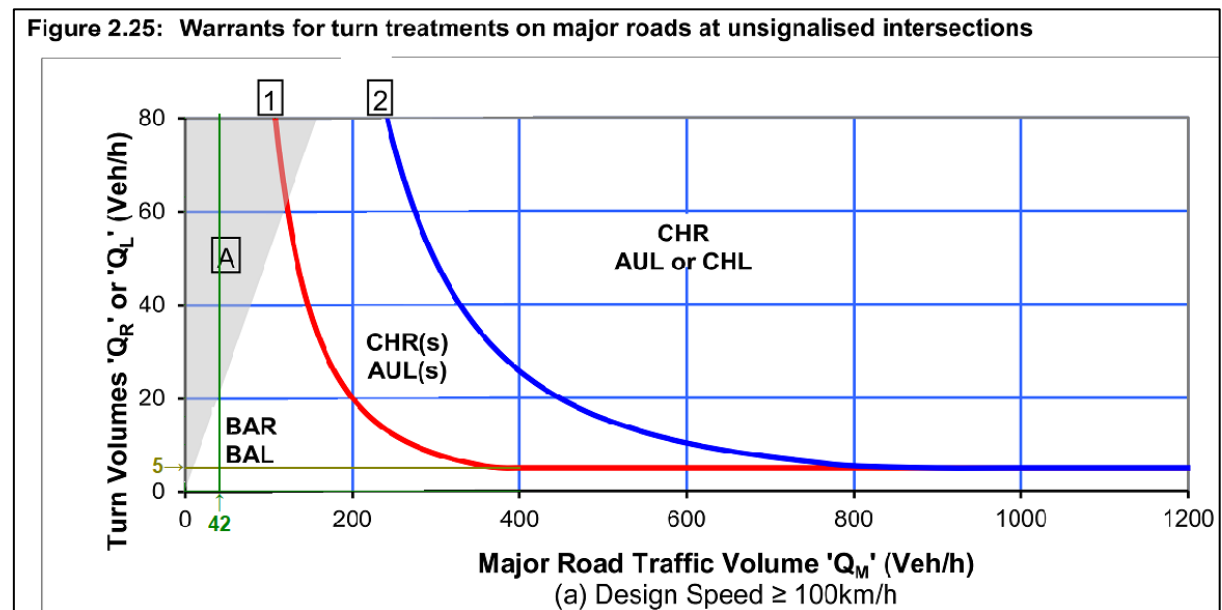
Stages	Summary
Project Context	The project involves a solar farm. There is no ongoing change in heavy vehicle traffic. After construction, the solar farm is predicted to increase traffic only slightly, by one to two light vehicles per quarter.
	Speed limit on Gwydir Highway is 110 km/h
	ADT on the Gwydir Highway in October 2008 was 607 vehicles with hourly movements of up to 42-vehicles in each direction at peak.
	72% of ADT are light vehicles (436 vehicles) and 28% are heavy vehicles (171 trucks).
	ADT for the property access is estimated as 27 vehicles per day.
Crash Data	No crashes have been recorded at the intersection.
Treatments in local area	The intersection at present consists of a BAR-BAL intersection whose intersection mouth is undersized for heavy vehicle use.
	Line marking allows east travelling vehicles to pass at any point. A barrier line prevents west travelling vehicles from passing for 195 metres leading up to the intersection.
	The Mallowa Road intersection is approximately 2 km east of the intersection. It appears to be below specification for a BAR or BAL layout as it doesn't appear to include shoulder widening.
	There are no nearby intersections to the west apart from simple property accesses.
	No intersection warning signs are present along this section of Highway.

A review of the required treatment has been undertaken using Figure 2.25 of Austroads Guide to Traffic Management 2019 - Part 6 to determine the turn treatment requirements for the intersection.

There is limited information on existing traffic along this part of Gwydir Highway, with data only available for eight days in October 2008 at the nearest station (ID 91051 - 7.13km East of Mallowa Road, Moree) on the TfNSW Traffic Volume Viewer. Of these days, the highest daily total was 300 vehicles in each direction. With the highest hourly total being 42 vehicles in each direction.

Figure 2.25 below shows the warrants for different intersection types. A vertical line for Major Road Traffic Volume at 42 vehicles/hour has been added (maximum on record). A horizontal line has been added at 5 vehicles. Any intersection with an hourly turning volume less than this value is considered suitable for a BAR BAL intersection.

Due to the low turning volume (3-4 vehicles per hour total), as well as the low major road volume, an assessment of figure 2.25 indicates that the intersection requires a BAR and BAL treatment.



A survey was undertaken in January 2022, to ascertain the current dimensions of the Gwydir Highway intersection. Plans have been prepared for review of this intersection. The current layout and proposed changes are shown on the attached plan.

**Figure 1: Gwydir Highway intersection**



The existing intersection of Gwydir Highway with the access road to Wathagar Cotton Gin appears to have initially been constructed as a BAR/BAL layout. The intersection contains appropriate shoulder widening for the BAR/BAL layout in both directions. Details of shoulder widening are provided below:

- Current shoulder widening of the highway for the BAL (north-west of intersection) is approximately 80 metres at 6 metres wide, with a taper of about 90 metres. This exceeds by far the minimum widening of 35 metres with a taper of 23 metres as calculated.
- Current shoulder widening of the highway for the west side of the BAR (south side of intersection) is about 15 metres at 7 metres wide with a taper of about 120 metres.

15 metres at 7 wide matches Austroads requirements where the taper far exceeds the required 38.2 metres.

- Current shoulder widening of the highway for the east side of the BAR (south side of intersection) is about 61.2 metres at 7 metres wide with a taper of about 104 metres. 61.2 metres at 7 wide matches Austroads requirements where the taper far exceeds the required 38.2 metres.

The intersection fails in some respects for the design vehicle, being an A-double (Type I Road Train). The mouth of the intersection is too narrow on both the east and west sides to accommodate this vehicle, allowing for another vehicle to be waiting in the intersection to turn out of the site. Required shoulder widening is detailed below:

- On the eastern side, an A-double turning left out from the property with the existing intersection layout would be unable to do so without either leaving the pavement or crossing into the oncoming lane. Some widening of the shoulder (about 32 m<sup>2</sup>) will be required as shown on the attached plan.
- On the western side, an A-double turning right into the property would currently have to utilise about three quarters of the intersection mouth, which would create conflict with any vehicle waiting to exit the property. A large amount of widening of the shoulder (about 150 m<sup>2</sup>) will be required as shown on the attached plan. This widening will also necessitate the removal of the western of the two trees flanking the intersection.

Also of note are missing and incorrect line-marking on the intersection. Recommended new line marking is shown in red on the plan attached.

- The centreline and give-way line of the intersection are not currently paint-marked, but the appropriate position of these lines is shown and used in calculating vehicle swept paths
- The existing lane line on the south side of the intersection is incorrectly painted. It appears to follow the shoulder widening, reaching a width of up to 5.5 metres. The lane should not be widened to match shoulder widening and should be marked at 3.5 metres width throughout.

### Key Traffic Management Considerations

The Guide presents key traffic management consideration in the selection of unsignalised at-grade intersections. The following table addresses these parameters for basic intersections:

Austroads Parameter	Comment
<b>Basic</b>	
Used at urban locations where low-volumes and low-speeds occur and at rural sites with low cross and turning volumes.	Peak hourly traffic rate is approximately 42 vehicles for highway and 4 vehicles per hour in and out of Wathagar Cotton Gin
Designed to be compact and low cost; can be used with any road surface.	

Austroads Parameter	Comment
Offers no protection to turning traffic and causes through traffic to slow when such movements occur.	This is a minor issue based on the limited number of vehicles using the intersection as well as the limited through traffic on the highway.
Skewed T-intersection (Figure 5.1) layouts may have safety problems	The T intersection is perpendicular to the Highway.
Consider the needs of other road users including pedestrians, cyclists, motorcyclists and heavy vehicles (Section 2.4).	No pedestrians or cyclists present.

### Sight Distances

Safe Intersection Sight Distance (SISD) at the intersection was also analysed based on the October 2021 survey. The road alignment was surveyed beyond 500 metres in both directions along the Gwydir Highway, with possible obstructions also surveyed.

There are no obstructions to 500 metres in either direction. The alignment is close to straight for this distance in both directions, apart from a slight curve with a radius of about 1420 metres and a deflection angle of about 5°45' to the north immediately to the east of the intersection. This slight curve has no effect on sight distance.

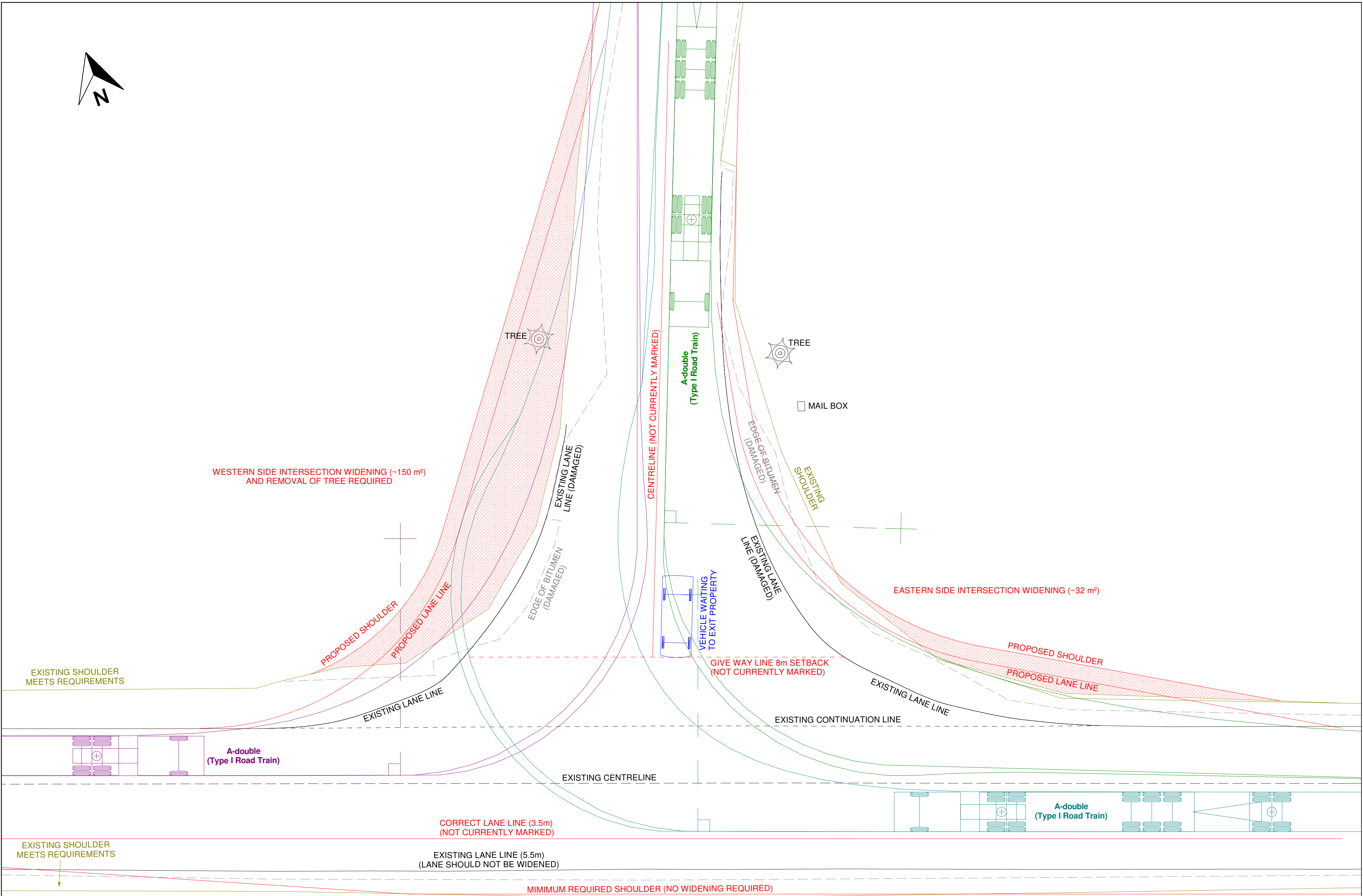
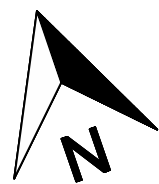
The appropriate SISD for each direction was calculated based on the Austroads Guide to Road Design. For the design speed of 110 km/h and a reaction time of 2.5 seconds on a flat grade, the appropriate SISD is 300 metres. Sight distance exceeds this value in both directions.

### Discussion

The intersection already meets the required shoulder widening for a BAR and BAL intersection. The widening of the mouth of the intersection is necessary to make turning vehicles safe. A-doubles currently have no way of entering or exiting the property without entering the opposite lane and causing a possible conflict with oncoming vehicles.

## Appendix 1 – Existing Intersection & Preliminary Design





SCALES: HORIZ 1:150  
VERT \_\_\_\_\_  
DATUM: LOCAL AHD MGA ZONE 55  
SURVEYED: JAMES LILLYMAN  
DESIGNED: JAMES LILLYMAN  
CHECKED: PAUL COVELL

A2

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CLIENT: KINELLI PTY LTD  
PROJECT: WATHAGAR INTERSECTION

DESCRIPTION:  
ASSESSMENT OF EXISTING INTERSECTION  
SUITABILITY FOR A-DOUBLE VEHICLES  
AND PRELIMINARY LAYOUT PROPOSAL

PLAN REVISION:		DATE	SHEET No.
A	FIRST ISSUE	20-01-2022	1 of 1
B			JOB No. 21-367
C			COMPUTER FILE (MJO): 2022-01-18 EXISTING INTERSEC