UPC\AC Renewables Australia Pty Ltd
ACN 616 856 672 ABN 27 616 856 672
Suite 2, Level 2, 13 – 17 Castray Esplanade
Battery Point, TAS, 7004

Iwan Davis
Team leader
NSW Department of Planning, Industry & Environment

24th February 2021

Dear Mr Davis,

**New England Solar Farm (SSD-9255)**
**Upgrade of New England Highway & Barleyfields Road (north) intersection**

Planning approval for NESF was granted on 9 March 2020, and a subsequent modification to the approval on 19 February 2021. A road upgrade of the New England Highway and Barleyfields Road intersection was stipulated in Appendix 4 of the Conditions of Consent, requiring a Channelised Right Turn (**CHR**) treatment.

UPC\AC Renewables Australia (**UPC**) is requesting the NSW Department of Planning, Industry, and Environment (**DPIE**) to approve a variation to the treatment of this intersection from CHR to a Shortened Channelised Right Turn (CHR-S). Schedule 3 Condition 4 of the New England Solar Farm Development Consent permits the Secretary to vary the road upgrade requirements.

Transport for NSW (TfNSW) is the roads authority for these works. UPC has been in discussions with TfNSW since 2019 regarding the upgrade of the intersection. TfNSW undertook an upgrade of the intersection in 2020 that included the provision of a left turn lane into Barleyfields Road when heading south. This design, although not fully implemented proposed a CHR-S provision of a right turn lane into Barleyfields Road for northbound traffic.

During discussions between TfNSW and UPC it was determined that a CHR-S treatment was the preferred solution as –

1. The CHR-S is the appropriate treatment of the intersection based on current and forecast traffic volumes (excluding construction traffic) (refer TfNSW letter in Attachment A)
2. Construction traffic could be managed through appropriate safety measures to be documented in the conditioned Traffic Management Plan
3. A CHR intersection would reduce the length of the northbound overtaking lane leaving Uralla, which was not preferred by TfNSW (refer TfNSW letter in Attachment A).

A meeting was held on 28 October 2020 with DPIE, TfNSW and UPC to discuss the proposed change to the consent requirement. Following this meeting TfNSW provided a letter (refer Attachment A) of support for the change to the CHR-S treatment, subject to implementing appropriate traffic management measures. TfNSW made the following commentary –

"… peak construction traffic impacts to be managed under the conditioned Traffic Management Plan. It is understood that the Traffic Management Plan will be prepared in consultation with TfNSW and that the document will include a range of temporary measures to safely manage construction traffic demands within the capacity of the proposed CHR-S treatment, at all times whilst construction vehicles are using the New Highway and North Barleyfields Road intersection."

The NESF Project Team has since prepared the Traffic Management Plan (refer Revision 6 submitted to DPIE) in consultation with TfNSW, that includes a range of temporary measures to safely manage construction vehicles through the CHR-S intersection. TfNSW has been consulted in relation to these measures and has provided their acceptance as evidenced in Attachment B.

The NESF Project Team commissioned SMEC to design the intersection. SMEC has provided a Technical Note that has been used as a basis for confirming that the CHR-S is the appropriate solution for the current and forecast traffic volumes (refer Attachment C).

Following approval of the CHR-S treatment and Traffic Management Plan, UPC will continue discussions with TfNSW to finalise the intersection design and enter into the Works Authorisation Deed to allow for the intersection works to proceed as soon as possible.

With consideration to the above, we seek approval for the proposed CHR-S treatment of the intersection.

Please do not hesitate to contact me should you have any questions.

Kind Regards,
**UPC\AC Renewables Australia**

Tim Greenaway
NESF Project Director

UPC AC Renewables
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# Attachment A

# Transport for New South Wales advice on Shortened Channelised Right Turn Treatment

28 October 2020

File No: NTH18/00058/15
Your Ref: SSD 9255

The Project Director
UPC/AC Renewables
Suite 2, Lvl 2, 15 Castray Esplanade
BATTERY POINT TAS 7004

Attention: Tim Greenaway – NESF Project Director

Dear Tim,

**New England Solar Farm (SSD9255)**
**Upgrade of New England Highway & North Barleyfields Road, Uralla**

I refer to your email dated 18 October 2020 requesting comment from Transport for NSW (TfNSW) in relation to conditioned State road works for the abovementioned project and my subsequent email of 20 October 2020 to Mr Lander Robinson of the Department of Planning, Industry and Environment (DPIE) seeking consideration of options to progress works authorisation for the intersection upgrade.

Following the meeting between TfNSW, DPIE and the Developer on 28 October 2020, it is understood that the Proponent now proposes to reduce the scope of road works on the New England Highway to provide an Austroads short channelised right-turn (CHR-S) treatment, with peak construction traffic impacts to be managed under the conditioned Traffic Management Plan. It is understood that the Traffic Management Plan will be prepared in consultation with TfNSW and that the document will include a range of temporary measures to safely manage construction traffic demands within the capacity of the proposed CHR-S treatment, at all times whilst construction vehicles are is using the New Highway and North Barleyfields Road intersection.

TfNSW raises no objection to the proposed change in scope and is willing to assist the Developer to progress the revised scope toward detailed design acceptance under a Works Authorisation Deed. TfNSW highlights that the change in scope will minimise impacts on an existing northbound overtaking opportunity in the interest of highway users and that the proposed CHR-S treatment will be more appropriate for operational traffic demands over the life of the major project.

If you have any further enquiries regarding the above comments please do not hesitate to contact or the undersigned on (02) 6640 1362 or via email at: development.northern@rms.nsw.gov.au

Yours faithfully,

Matt Adams
Manager Land Use Assessment, Northern
Regional NSW and Outer Metropolitan
Transport for NSW

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AUSTRALIA
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# Attachment B

# Transport for New South Wales acceptance of Traffic Management Plan measures related to CHR-S

| | |
|---|---|
| **Subject:** | RE: Traffic Management Plan - TfNSW feedback |
| **Date:** | Friday, 19 February 2021 at 10:24:35 am Australian Eastern Standard Time |
| **From:** | Development Northern |
| **To:** | Tim Kirk |
| **CC:** | Lander.Robinson@planning.nsw.gov.au, MATTHEW REILLY, VOLODYMYR KOZIY, Leisa Sedger, Freddy Becerra |
| **Priority:** | High |
| **Attachments:** | image001.png, image002.jpg, NESF1-SMEC-CW-00GRL-PLN-001 - Rev6.docx, NESF1-SMEC-CW-00GRL-PLN-001 - Rev6.pdf |

Hi Tim

Thank you for the opportunity to provide further comment.

TfNSW considers the TMP now includes appropriate measures to compliment the proposed shortened channelised right-turn (CHR-S) treatment at the New England Highway and North Barleyfields Road intersection. The effective implementation of these measures in a flexible and coordinated manner, subject to the identified review and improvement processes will assist the project in managing impacts on transport customers and infrastructure over the life of the development. I note the TMP includes mechanisms to address issues as they arise and consult with relevant authorities.

To clarify queries raised by the Consent Authority with respect to heavy vehicles. It is understood that the specified daily heavy vehicle movements will include general access and restricted access vehicles (RAVs). Additionally, there will be a limited number of Over Size Over Mass (OSOM) movements. The TMP identifies that all required notices and permits will need to be obtained from the NHVR prior to travel along the identified transport route. TfNSW notes this will apply to RAVs and OSOM vehicles using local Council roads. The TMP identifies proposed improvements to public roads to accommodate heavy vehicles movements along the transport route. The NHVR typically consults with the relevant Roads Authority when considering an access request for RAV/OSOM vehicles.

TfNSW has previously recommended that the Proponent investigate the scope of work that will be required to support any RAV / OSOM access for the project and consult with Council to understand any constraints. It is noted that the SSD includes environmental approval for road works along the identified transport route and that the Proponent will need to obtain necessary approvals from Council under the *Roads Act 1993*. The TMP describes a process for dilapidation survey, maintenance and repair of Council roads, which will be subject to agreement from the Council. Noting that Appendix B relates to proposed assessment of Council roads, it is suggested that Council be informed of the TMP and details of the supporting appendices to ensure the proposed approach is acceptable.

TfNSW supports the amended inclusions to the attached Traffic Management Plan (TMP). TfNSW considers that the impacts of the project on public roads, transport customers and infrastructure can be appropriately mitigated where the TMP is effectively implemented in coordination with the conditioned upgrades and in ongoing consultation with the relevant Roads authorities.

Please contact TfNSW if you require any further comment.

Best Regards

Matt Adams
Team Leader, Development Services
Community and Place | Region North
Regional & Outer Metropolitan
**Transport for NSW**

I work flexibly. Unless it suits you, I don't expect you to read or respond to my emails outside of your normal works hours.

**M** 0400 474 068
**E** development.northern@rms.nsw.gov.au
**A** Level 1, 76 Victoria Street, Grafton NSW 2460

NSW GOVERNMENT | Transport for NSW

I acknowledge the traditional owners and custodians of the land in which I work and pay my respects to Elders past, present and future.

---

**From:** Tim Kirk [mailto:Tim.Kirk@upc-ac.com]
**Sent:** Wednesday, 17 February 2021 3:22 PM
**To:** Development Northern <development.northern@rms.nsw.gov.au>
**Cc:** MATTHEW REILLY <mreilly@elecnor.com>; VOLODYMYR KOZIY <volodymyr.koziy@elecnor.com>; Lander.Robinson@planning.nsw.gov.au
**Subject:** Traffic Management Plan

Hi Matt,

Thank you for your time yesterday morning.

Please find attached the amended Traffic Management Plan, which has incorporated the points we discussed yesterday.

Let me know if you are fine with these proposed changes and I will then submit this plan formally via the Major Projects Portal.

Kind Regards,

**Tim Kirk** | Project Development Manager
UPC\AC Renewables Australia
*A UPC Renewables and AC Energy Company*

UPC AC Renewables AUSTRALIA

**M:** +61 403 857 079
**E:** tim.kirk@upc-ac.com

**Hobart:** Suite 2, Level 2, 15 Castray Esplanade, Battery Point, TAS 7004
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# Attachment C

# Green Light Contracting advice and SMEC Technical Note on CHR-S treatment

Green Light Contractors Pty Ltd
Level 19, 90 Collins Street
Melbourne VIC 3000
ACN: 168 435 658
Phone: 0400 356 837
Email: mreilly@elecnor.com

21 December 2020

**UPC/AC Renewables**
Suite 2, Level 2
15 Castray Esplanade
Battery Point, TAS, 7004

Attention: Tim Greenaway
Project Director
UPC / AC Renewables

Cc: Carlos Miralles
Project Director
Green Light Contractors

By email: tim.greenaway@upc-ac.com
Cc: cmiralles@elecnor.com

Dear Tim,

**Re: State Significant Development SSD 9255 - New England Solar Farm – New England Highway Intersection Upgrade**

In response to the inquiry received relating to the right-turn treatment at the New England Highway intersection with Barleyfields Road, GLC has undertaken consultation with it's design consultant, SMEC engineering, UPC/AC Renewables (the client) and TfNSW (asset owner).

The development consent for New England Solar Farm specifies that a Channelised Right Turn (CHR) treatment is to be applied to the New England Highway intersection. Through consultation with aforenoted project stakeholders, Green Light Contractors (GLC) understands that:

1. The operational and background traffic demands following construction do not warrant a full CHR treatment. Using forecasted peak construction traffic volumes and by estimating the origins of construction related vehicle movements, a full CHR would be warranted under the Austroad's Guide during times of high construction traffic movements.
2. Preliminary design feedback suggests that a CHR treatment will require adjustment of the northbound overtaking lane, located on the highway to the south of the intersection works. GLC understands that this is an undesirable impact from an asset owner's point of view.
3. The asset owner's end-state desired treatment would be a shortened Channelised Right Turn, (abbreviation CHR-S), as it would not impact the northbound overtaking lane located to the south of the intersection and is the warranted treatment given end-state traffic volumes.
4. As peak construction traffic is a temporary occurrence, appropriate traffic management measures may be combined with a CHR-S treatment to accommodate the forecasted traffic volumes through the intersection during the construction phase of New England Solar Farm.

GLC commissioned SMEC engineering to provide a technical assessment of the right turn treatment at New England Highway. The resultant Technical Advice Note (TAN), attached below, assesses the introduction of the forecasted traffic volumes into the intersection. This TAN provided the basis of discussion for a meeting on 21st September 2020 with aforementioned project stakeholders. It was concluded that:

- a CHR-S would be progressed to detailed design stage for submission to TfNSW as part of TfNSW's Works Authorisation Deed (WAD) process.

- As part of the detailed design submission to TfNSW, GLC will provide on behalf of the proponent a design report which nominates proposed traffic management and control measures to be implemented at the intersection as a basis for further discussion with TfNSW.

GLC notes that the proposed traffic control measures include:

1. Implementation of a variable speed limit, whereby during times of high construction traffic, the speed limit of the intersection is reduced to 80 km/h. Variable Speed Limit Signs (VSLS) would indicate to road users the temporary speed reductions.
2. Implementation of a "drive-by" measure for northbound, project-related vehicles on New England Highway. Such vehicles, who intend to turn right into Barleyfields Road but encounter insufficient space in the right-turn storage lane due to other vehicles already being present in the storage lane, must continue straight towards Armidale. The vehicle must then drive 14km north to the large roundabout located on the New England Highway, prior to Armidale. At this roundabout, the vehicle will be able to perform the equivalent of a U-turn maneuver by navigating around the large roundabout. Upon exiting the roundabout, the vehicle will then travel in a southbound direction on the New England Highway and turn left at the intersection with Barleyfields Road, then continue to site via the approved access route.
3. Installation of Automatic Traffic Counters (ATC's), such as pneumatic road tube, to gather data relating to actual traffic volumes through the intersection and enable for on-going monitoring of the intersection's performance.

We trust that the provided information satisfactorily addresses this inquiry. Should you require any further information, please do not hesitate to contact the undersigned.

Yours faithfully,

Matt Reilly
**Construction Manager – New England Solar Farm**
**Green Light Contractors Pty Ltd**

**Attachments:**

1. SMEC's Technical Advice Note – New England Highway intersection (dated 7th September 2020)

Member of the Surbana Jurong Group

# TECHNICAL ADVICE NOTE

| | |
|---|---|
| **Project Name:** | **New England Solar Farm** |
| **Issued To:** | Mathew Reilly |
| **Copied To:** | Julie Tom |
| **Revision Date:** | 07/09/2020 |
| **Document Ref:** | NESF1-SMEC-TAN#001 |
| **Internal Ref** | 30018016-TAN-002 |
| **Revision:** | Rev 1 |
| **Detail:** | **New England Highway intersection** |

FOR DISCUSSION

## 1. Introduction

### 1.1 Purpose

The purpose of this Technical Advice Note is to provide a technical assessment on the requirements for upgrading the Barleyfield Road / New England Highway (NEH) intersection due to the increased traffic attributable to the New England Solar Farm development.

### 1.2 Existing Traffic

EMM prepared a Traffic Impact Assessment Report for the solar farm as part of the Environmental Impact Statement. Section 2.4.1 of this assessment concluded that:

- the 2018 traffic volume on the New England Highway was 660 vehicles in the peak hour (330 per direction) , and
- that the daily volume on the northern section of Barelyfield Road was 645 with 9.3% heavies. Assuming the peak hour is 12 % of the AADT, this would equate to 78 v/hr

Assuming that the directional split on Barleyfield Road is 50 /50 this would equate to 39 inbound vehicles and 39 outbound vehicles.
Assuming the directional split of the turning traffic on the NEH is 80% from Armadale and 20% from Uralla, the right turning volume on NEH would be 8 v/h, and the left turn into Barleyfield would be 31 v/h. This is shown graphically below.

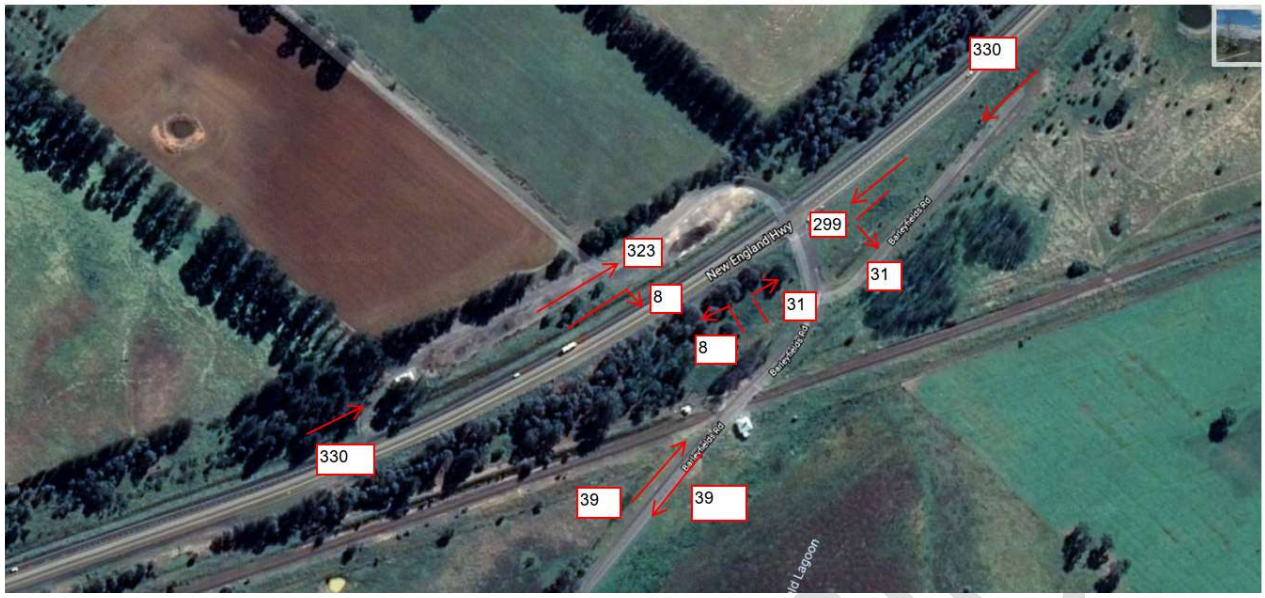
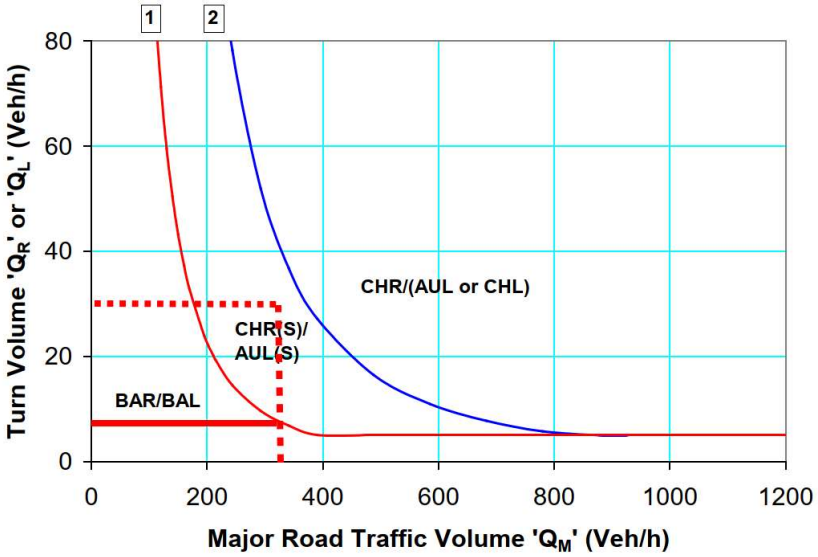


Figure 1 - NEH / Barleyfield intersection - Existing Traffic volumes

Based on the existing traffic volumes, the warrant charts in the Austroads Guide would indicate that a CHR(S) AUL (S) is required for the intersection



(a) Design speed ≥ 100 km/h

Transport for NSW has previously recognized the need to upgrade this intersection and has an approved plan for this upgrade. The intersection upgrade has been partially undertaken, with the AUL having been provided, however no work has been done the north western side of the intersection to provide the CHR(S)

### 1.3 NESF Development - Operational traffic

The EMM traffic impact assessment reported that the daily light vehicle during the **operational phase movement** would be up to an additional 30 movements per day (15 round trip), with the only heavy vehicle trips being for infrequent repairs and maintenance.

The majority of O&M movements are expected to originate in Armadale and will have negligible impact on traffic turning right off the New England Highway and into Barleyfield Road. O&M movement that originate from Uralla and Tamworth will be required to follow the approved site access route, which prohibits access to the site from Barley field South. These vehicles will then make use of the CHR(S) at the NEH / Barleyfield Road

Notwithstanding this, the traffic volumes on northern section Barleyfield Road has being increased by an additional 12 v/h to account for operational traffic. This increase in traffic volumes during the operational phase, can be accommodated within the CHR(S) AUL(S) upgrade that was proposed by Transport for NSW.

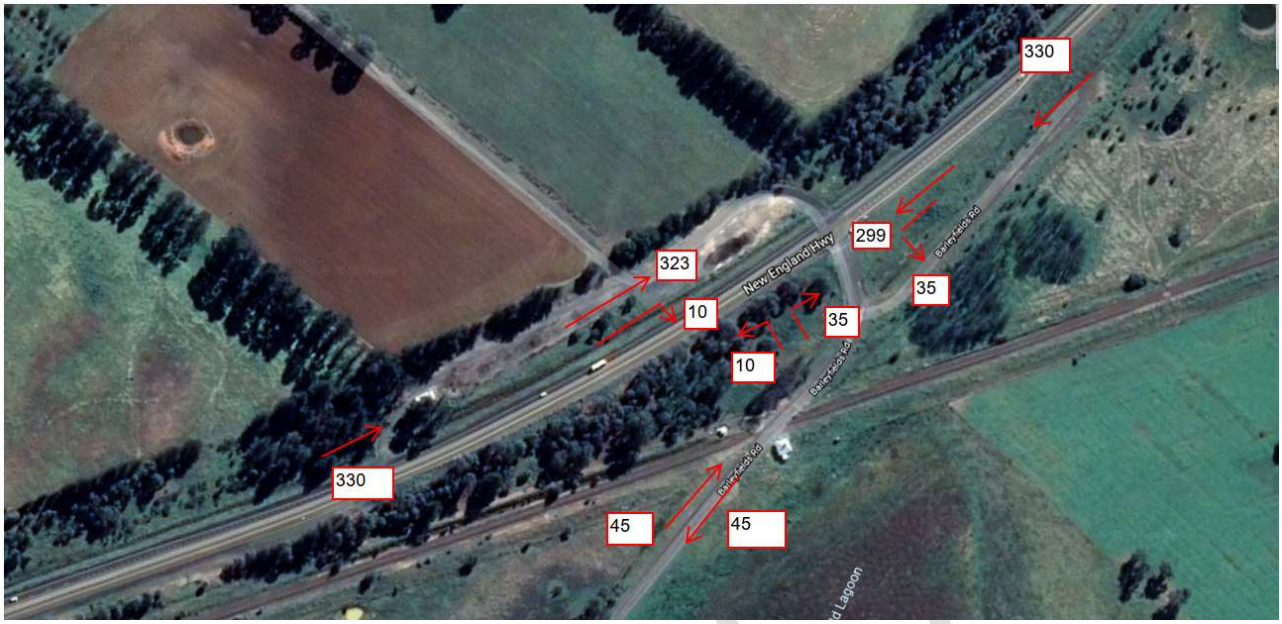
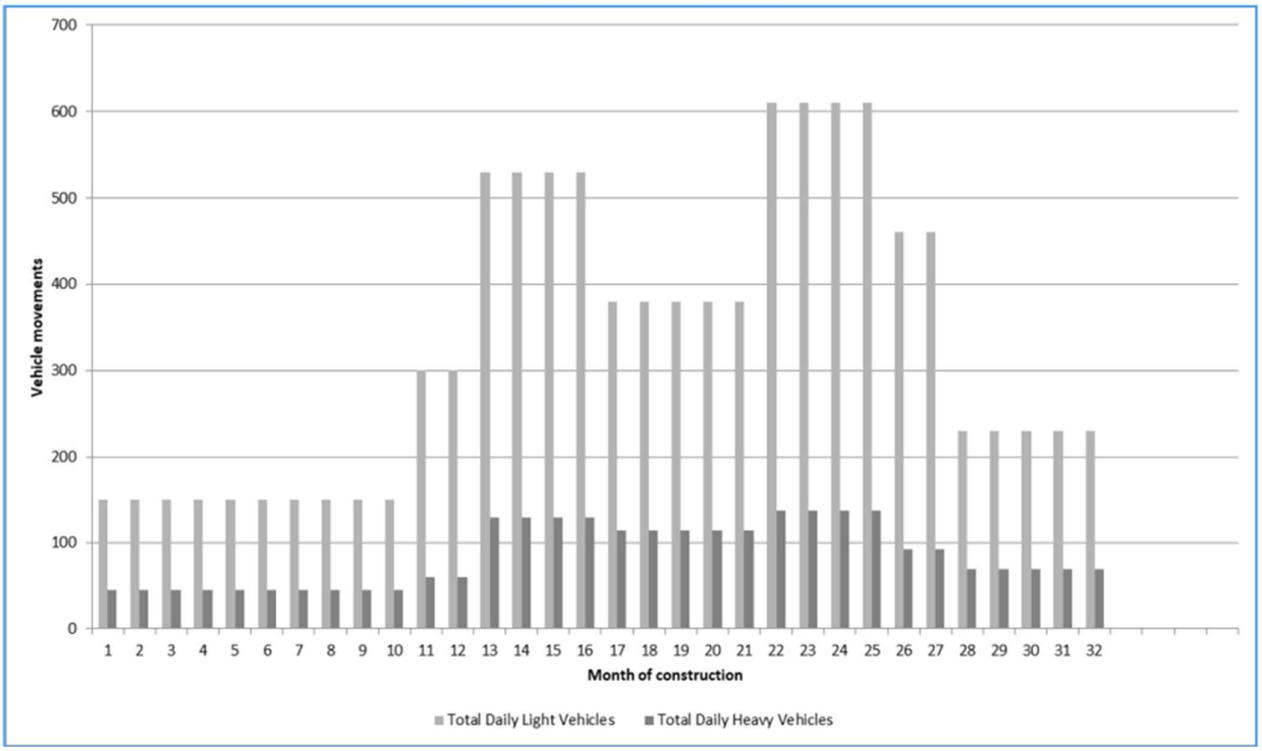



Figure 2 - NEH / Barleyfield intersection - Operational Traffic volumes

### 1.4 NESF Development - Construction traffic

In their TIA EMM, concluded that the major traffic impact would be during the construction phase and provided the following traffic profile for the construction phase of the development




Since the preparation of the TIA by EMM, Green Light Contractors have refined their construction management plan

- The major traffic impact would be during construction
- NESF Stage 1 (400MWAC) is expected to have a peak workforce of approximately 350 people
- NESF Stage 2 (320 MWAC) - This will be a portion of the northern array + the central array.

- It is envisaged that stage 2 will not overlap with stage 1. If it does, it is not anticipated that the peak workforce will be increased.
- The southern array has been removed from the development
- All light and heavy vehicles would access the site via the NEH/ Barleyfield intersection
- There will be no onsite construction village
- Peak traffic for Start of the Construction shift is expected to occur between 5:30 and 6:20 in the morning and is offset from the AM peak on the NEH
- Peak traffic for the end of the construction shift is expected to occur between 5:30 and 6:30 in the evening and is offset from the PM peak on the NEH

## 2. Technical Assessment

Based on new information regarding traffic movements etc, it was considered merit worthy to reassess the turning volumes into and from the site. This assessment is contained in the details below

### 2.1 Trip Generation

The construction Peak hours have been identified as being between 5:30 and 6:30 in the morning and the 5:30 and 6:30 in the afternoon. This is offset from the usual peak hour traffic which is normally considered to be between 7:00 and 8:00 in the morning and between 4:30 and 5:30 in the afternoon.

It would therefore be overly conservative to use the NEH Peak hour traffic and combined with the solar farm peak hour traffic. A more reasonable approach would be to determine the likely traffic on the NEH between 5:30 and 6:30 (Coinciding with the solar farm peak hour traffic) and express this as a % of AADT. As detailed traffic counts are not available for this location on the NEH, SMEC has used a comparable highway and calculated that the traffic volume on a rural highway between the hrs of 5:30 and 6:30 and found this to be between 4 and 6% of AADT peak hour Volumes

It is assumed that 100% of the peak construction workforce and 10% of the daily heavy vehicle inbound trips would occur between 5:30 and 6:30 in the morning. It is assumed that deliveries will occur at regular intervals over the 12-hour shift and without any particular bias to the AM peak.

### 2.2 Trip Distribution

In the TIA, it was assumed that 40 % of the workers would reside in Tamworth, 40% in Armidale and 20% would be accommodated in a construction accommodation village. However, the latest accommodation and employment strategy states that the idea of a construction village will no longer be pursued, and the provides the the following Indicative breakdown on how construction workers will travel to site:

40% of the works force will be from the south

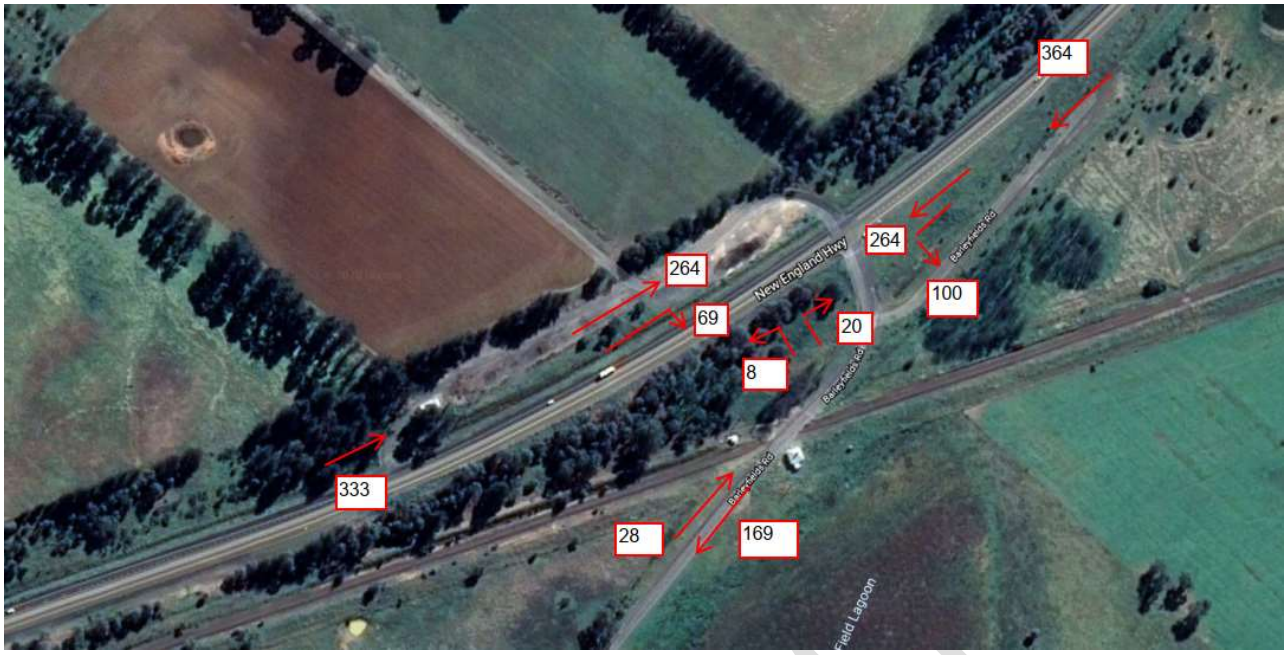
- 20% Tamworth / Walcha locals
- 10% Uralla locals
- 10% Uralla DIDO / FIFO

- 60% of the work force will be from north
  - 20% Armidale locals
  - 40% Armidale DIDO / FIFO

It is assumed that local population will use their own vehicles with a vehicle occupancy rate of 1.2, and the DIDO/FIFO workforce will travel to site on minibuses with a vehicle occupancy of 10

Based on the above traffic distribution the expected AM Peak Hour movement are shown below, with the full calculation being contained in Appendix A

FOR DISCUSSION

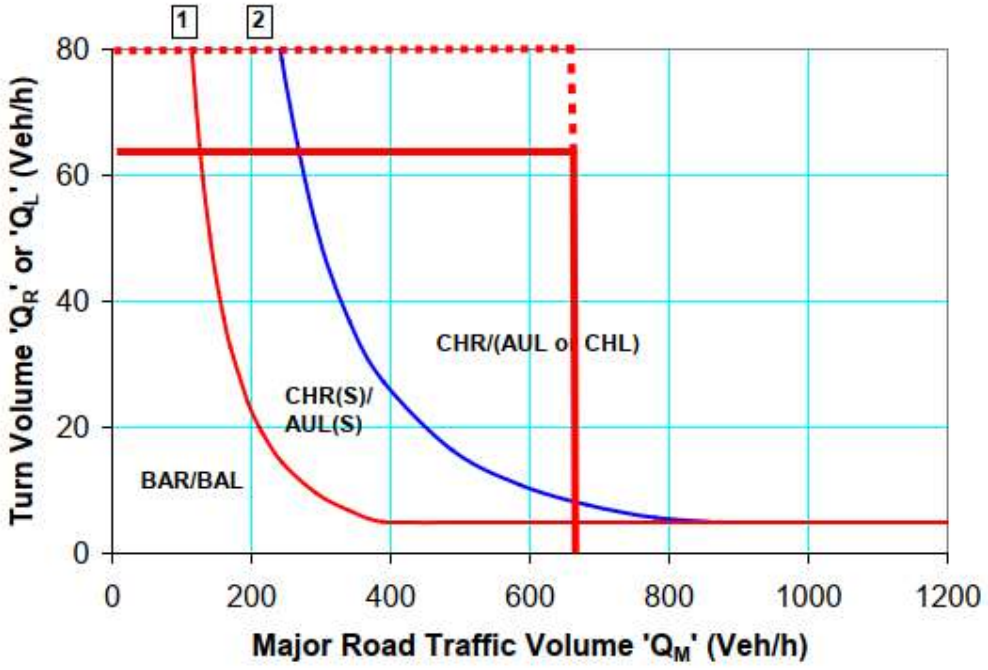



### 2.3 Assessment against turn warrant

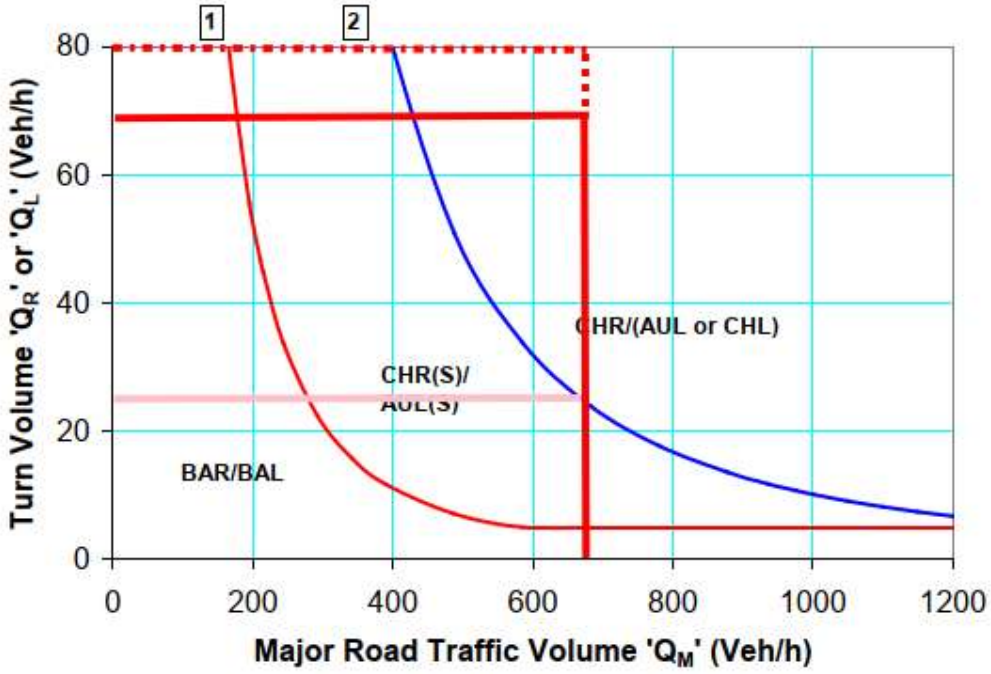
The assessment of the Turn Warrants contained in the Austroad Guide to Road Design Part 4 indicate that the intersection should be upgraded to a CHR AUL for both the 100km/h and 80km/hr scenarios. However, since construction is a temporary condition, with the peak construction being for a period of less than 6 months, Transport for NSW may consider a design exception to the Austroads requirements, by reducing the speed on the NEH to 80km/h and building the CHR(S) only (not a Full CHR.). The CHR(S) would be a suitable intersection form for the Operational Condition.

FOR DISCUSSION

Figure A 10: Warrants for turn treatments on the major road at unsignalised intersections




(a) Design speed ≥ 100 km/h




(b) Design speed < 100 km/h

### 2.4 PM Peak Assessment

To confirm that the NEH intersection will operate satisfactorily, SMEC has assessed the PM Peak volumes for vehicle turning left and right out of Barley Filed Road onto the new England Highway. Using SIDRA and can confirm the Barleyfield intersection will operate as LOS A

## 3. Assessment of Options

In undertaking this assessment, SMEC has considered 3 options

- Option1 - The CHR(S) with the speed on the new England Highway reduced to 80km/h for the duration of construction
- Option 2 - A full CHR with the speed on the new England Highway being either 80km/h or 100km /h
- Option 3 The Seagulll intersections proposed by Acor Consultants

### 3.1 Option1: CHR(S) /AUL

#### 3.1.1 Advantages

- Consistent with Transport for NSW vision for the NEH intersection
- Most cost effective for the development
- AUL has already been provided by Transport for NSW
- An Transport for NSW Approved Design for the intersection exists

#### 3.1.2 Disadvantages

- Would require approval from Transport for NSW to temporarily reduce the speed on the NEH to 80/km during construction
- Would require a Design exception as the traffic turning onto Barelyfields road would exceed the turn warrants threshold
- Very sensitive to changes in the construction traffic profile (Limited flexibility to change the construction traffic profile)

### 3.2 Option 2: Full CHR

#### 3.2.1 Advantages

- Provides a higher standard than required by Transport for NSW and will provide additional capacity
- Will provide significant flexibility to change the traffic profile of the construction workforce
- AUL has already been provided by Transport for NSW
- Only slightly more costly that Options 1

#### 3.2.2 Disadvantages

- Slightly more expensive
- Will require development and the CHR intersection and approval by Transport for NSW which could be time consuming

### 3.3 Option 3: - Seagull

#### 3.3.1 Advantages

- AUL has already been provided by Transport for NSW
- Complies with turn warrants

#### 3.3.2 Disadvantages

- Significantly more expensive than other options
- Will require lighting dues to the raised medians within the intersection

A summary of the various options is provided below:

FOR DISCUSSION

| Criteria | Option 1 - CHR(S) AUL | Option 2 - CHR | Option 3 - Seagull |
|---|---|---|---|
| Complies with Turn warrants for Operational traffic | Yes- | yes | Yes |
| Complies with Turn warrants for construction traffic (AM) | No - would require DE and reduction in speed limit on NEH | yes | yes |
| Operates satisfactorily (PM Peak | Yes | Yes | yes |
| NEH efficiently maintained | No – requires temp speed reduction | Yes | yes |
| Cost ($) | +- 400k | +- 450K | +-1.2M |

## 4. Next Steps

GLC to arrange a meeting with Transport for NSW to further explore the possibility of reducing the speed to 80km/hr on the NEH during the construction period and providing the CHR(S) only to accommodate both operational and construction traffic.

FOR DISCUSSION

| Road | Location [1] | Upgrade Requirements | Timing |
|---|---|---|---|
| New England Highway and Barleyfields Road (north) | Intersection | Channelised Right Turn (CHR) treatment for the largest vehicle assessing the site (excluding over-dimensional vehicles) [2] | Prior to construction |
| Barleyfields Road | Between New England Highway and Big Ridge Road | Seal to a width of 7.2 m with 1 m unsealed shoulders (total carriageway 9.2 m) [2] | |
| Barleyfields Road and Big Ridge Road | Intersection | Basic Left Turn (BAL) treatment to cater for the largest vehicle accessing the site (excluding over-dimensional vehicles) [2] | |
| Big Ridge Road | Segment 1 | Seal to a width of 7.2 m with 1 m unsealed shoulders (total carriageway of 9.2 m) [2] | |
| | Segment 3 | | |
| | Segment 4 | Gravel (unsealed) carriageway to a width of 8.7 m | |
| | Segment 5 | | |
| | Site access points | Rural Property Access Type [2] | |

| **TAN Author** | **Approved** |
|---|---|
| Howard Goodes | Approved for discussion |
| **TAN Review**<br>Stephen Williamson | Approved for discussion |

FOR DISCUSSION