



**Activity: Allepad PV (I,II,III,IV) Traffic Management Plan**

**Deliverable: Draft Management Plan**

**Submitted to: ILEnergy Development**

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### Key Abbreviations

ACT	-	Occupational Health and Safety Act, Act No 85 of 1993 & National Road Traffic Act, Act No 93 of 1996
CBA	-	Critical Biodiversity area
DAFF	-	Department of Agriculture Forests and Fisheries
DRDLR	-	Department of Rural Development and Land Reform
ESA	-	Ecological Support Area
LM	-	Local Municipality
LMV	-	Light Motor Vehicle
MPRD	-	Mineral and Petroleum Resources Development
NHRA	-	National Heritage Resources Act
PPE	-	Personal Protective Equipment
RE	-	Remaining Extent
SALA	-	Subdivision of Agricultural Land Act
SME	-	Surface Mobile Equipment
SMS	-	Short Message Service "Texting"
WMA	-	Water Management Area

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## 1. Approach

This Traffic Management Plan has been prepared by ILEnergy (Pty) Ltd, based on their experience gained with multiple solar power construction projects in Upington and the Northern Cape Province, to describe how the EPC will safely and effectively control and minimize road-related impacts arising from the construction of the proposed Allepad PV solar power generation projects (I, II, III, IV), located approximately 15km Northwest of Upington in the Northern Cape Province just off the N10.

## 2. Purpose

The Traffic Management Plan is prepared for the road site access to make sure that no hazards would result from the increased traffic and that the normal traffic flow would not be adversely impacted by the project and its construction.

The objective of the Traffic Management Plan is to improve road safety, promote safety awareness, improve road traffic conditions, and implement improved road traffic management systems at the construction site.

Under this plan, informational and temporary signage will be used to inform the public of traffic hazards and convey safety measures in place, flaggers would be employed when significant equipment is delivered that may cause delays on throughways when such vehicles has to access the site and traffic cones could be used to identify any temporary changes in lane configuration necessary to minimize traffic impacts.

This plan will be submitted to SANRAL as the relevant authority for review and approval prior to construction being initiated.

The plan applies in conjunction with the relevant Acts namely:

- Occupational Health and Safety Act, Act No 85 of 1993
- National Road Traffic Act, Act No 93 of 1996

### 3. Project Description

The Allepad Solar Project proposes the construction of 4 by 100MWnet solar PV projects on the Farm Allepad in the Northern Cape Province, being the remaining extent of ERF 5315 (a portion of ERF 1 Upington with LPI code C02800070000531500000), approximately 15km NW of the town of Upington, the regional capital of the Dawid Kruiper municipality, in the Northern Cape Province.

### 4. Site Access

#### 4.1. Description

The site of the proposed project borders the N10 national highway to Namibia in the South and the regional R360 road in the North. As the existing official SANRAL farm entrance is off the N10, this entrance will be maintained and used as the main access to the site.



Figure 1. Aerial View of the Existing Farm Entrance off the N10.

## 4.2. Suitability

The current access has been created to accommodate the commercial activities of the farm Allepad and as such is suitable for the use by cars, light delivery vehicles, trucks and heavy-duty motorised farm implements. As such no modifications are required to adapt the existing entrance to the requirements of the project.

## 4.3. Hazards

The view from the existing farm entrance in the SE and NW directions are presented below.



Figure 2. Existing Farm Entrance off the N10.


The road approaching the site access from both directions is straight with no turns or inclines impacting the drivers view. The access is further located on a flat portion of land, as such there are no topographic features that impairs visibility.

Taking the above into account, it can be concluded that the conditions of the existing access from the N10 national road does not present any hazards that are out of the ordinary and that industry standard practice should be applied in managing the site access and traffic calming requirements during construction.

## 5. Management Plan

### 5.1. Site access

Site access will at all times be controlled and limited by the appointed security entity including an alcohol and drug management and testing procedure.

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## 5.2. Traffic control plan

### 5.2.1. General Requirements

#### 5.2.1.1. Surface mobile equipment

This Traffic Management Plan applies to all surface mobile equipment (SME), ancillary and earthmoving equipment that is used for transport, operations and maintenance in and around the surface area of the site.

#### 5.2.1.2. Light motor vehicles

This Traffic Management Plan applies to all light motor vehicles (LMV), that can be licensed under the ACT and are used for transporting people and light loads. Private vehicles will only be allowed to park within designated car parks and shall not be used when conducting work associated tasks.

#### 5.2.1.3. Chocks

All Surface Mobile Equipment are required to carry and make use of Chocks / Stop Blocks. The chocks must be of the correct size and specification for the weight and tyre size of the SME as prescribed by the chock block manufacturers. Chocks must be placed at the front and rear of the wheels in such a way that the SME will be unable to move, in the event of other immobilizers or parking brakes failing.


#### 5.2.1.4. Operating License

Employees may not drive or operate any vehicle and / or mobile equipment without an approved license under the Act or permit issued by the site operations management and authorised by the relevant manager. Such licenses are specific and restricted to, the class or type of vehicle or SME for which the person is trained and tested competent to drive and safely operate.

#### 5.2.1.5. Fitness to Operate

Drivers and operators should not drive or operate vehicles and / or mobile equipment if they are impaired due to any reason, including but not limited to the influence of drugs and / or alcohol, fatigue, injury or any physical restriction that would impact on their ability to operate a particular vehicle or machine.



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#### 5.2.1.6. Defensive Driving

Drivers and operators should be trained in and practice the techniques of defensive driving and operation. This means driving well within the safe limits of the vehicle and equipment operating limits and leaving enough time and room to react in the event of an unexpected condition or movement of another person, vehicle or equipment to avoid a collision or out of control situation.

#### 5.2.1.7. Pre-Use Check List

Drivers and operators should conduct a pre-use inspection of the vehicle or equipment prior to operation in accordance with the frequency and scope specified by the site procedure for this. A written pre-use checklist of that inspection should be available on the vehicle or equipment at all times. Damage and defects should be reported, and the vehicle or machine should not be operated.

#### 5.2.1.8. Running Lights

Running Lights (low beam head lights), and yellow strobe lights shall be left on at all times during operation on the project site. Strobe lights must be turned off when leaving the project site and entering any Provincial or National road.

#### 5.2.1.9. Mobile Phones


A mobile phone shall not be used whilst driving regardless of whether a hand free kit is used or not.

All vehicles shall be parked in a safe location before any calls are answered or made.

A mobile phone shall not be used to SMS (text), or for watching streaming content or listening to music whilst driving.

All SME operators will only answer their mobile phones in the hard park area whilst parked at the designated spots with the equipment switched off and park brake or equivalent applied.

Cellular phones shall not be used in any area where it is deemed unsafe to do so. These areas specifically include all areas where explosive charging and preparation activities are taking place, in areas where blasting operations are being conducted, in the vicinity of refuelling activities, or any other area demarcated as unsafe by management.

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#### 5.2.1.10. Safety of People

Personnel should not work on vehicle roadways without reflective clothing that meets the project requirements, specific reference is made to reflective vests.

A risk assessment of the work or operation, and of any proposed changes to traffic flows that may be required must be in place to manage the risks identified in the risk assessment.

These may include notification and communication, warning signs, lighting and traffic control systems to manage the risks of collision between vehicles/equipment and people.

Drivers and operators should exercise considerable caution in the vicinity of road construction and maintenance activities including but not restricted to road watering, grading, rolling, etc.

#### 5.2.1.11. Pedestrian Interaction

Designated walkways for pedestrians and identified pedestrian crossings shall be provided where appropriate.

Pedestrians must only use demarcated cross walks where provided, and if traffic is present only cross on that cross walk once sure oncoming drivers and operators are aware of their presence and intention to cross.

Where there is no demarcated cross walk, cross roadways at right angles, and only when the roadway is clear of traffic.


Give way to vehicles and equipment if not on a defined and clearly marked pedestrian crossing.

Use a walkway where one is provided in preference to walking along a roadway.

Walk facing the oncoming traffic when using a roadway.

Avoid having mid roadway discussions/meetings or answering of calls.

Do not approach working mobile equipment closer than 50 meters until they have contacted or attracted the attention of the operator, and the operator has correctly parked the vehicle or equipment and acknowledged the pedestrian and signalled that it is safe to approach.

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All pedestrian crossings will have a “Stop” sign on either side of the crossing.

Where visibility is obstructed, advance warning signage should be provided. Supplementary lighting may be provided at zebra crossings where practical.

Pedestrian crossing pavement markings should be maintained and kept clean so they are clearly visible to all road users. Safe pedestrian routes are to be clearly and consistently marked using a painted walking person symbol. Where necessary and possible the pedestrian route is to be protected from the encroachment of vehicles. Pedestrians should be able to escape quickly from the safe pedestrian route in an emergency.

#### 5.2.1.12. Notification of accidents, incidents and near misses

All near misses, incidents and accidents shall be reported to the H&S department within 24 hours. Any incident involving a light or heavy vehicle will require the drivers involved to partake in a drug and alcohol test. Drivers shall report to their supervisor any damage to their vehicle or any injury resulting from an incident on site. This includes any incident operating or driving a company vehicle off site.

### 5.2.2. Limiting and Mitigating local Traffic Impact

Numerous local traffic impact assessments have been undertaken in the recent past, specifically for large and permanent proposed developments such as the Upington Solar Park and Northern Cape Economic Development Area and/or SEZ. Findings in these studies concluded that the current operating conditions on the road networks in and around Upington are acceptable with no level of service or capacity failures. The existing critical peaks, in terms of traffic volumes, were found to be the PM rush hour with the AM rush hour less but similar. Minimal traffic intersection upgrades were recommended in these studies to accommodate the anticipated roughly 2500 new daily vehicle trips. <sup>[1]</sup> This is substantially more traffic than anticipated for the construction of the Allepad PV projects.

In order to ensure that no hazards result from the increased truck traffic, that traffic flow is not adversely impacted and to minimise any impacts on local commuters, Upington CBD and local schools the following measures will be implemented.

[1] “Traffic Impact Study for Proposed Development of The NCEDA Solar and Special Economic Zone Upington within Dawid Kruiper Local Municipality”, Emonti Consulting Engineers CC, November 2016.

#### 5.2.2.1. Routes to be used

Main inbound traffic anticipated will be from either Johannesburg or Cape Town via the N14. These will mainly consist of standard shipping containers at roughly 600 to 800 loads over an 8 to 12-month construction period (ie less than 5 vehicles per day). Localised movement of construction workers are estimated at about 200 people at the height of construction, adding roughly 50 LMV's and small transporter busses.

Heavy vehicles will stay on main routes from the N14 directly to the N10 or via Dr Nelson Mandela Drive (all double carriageways). This will circumvent the CBD and major schools. Refer to Figure 3 below.



Figure 3. Truck Traffic Route around Upington.

#### 5.2.2.2. Times of Use

Any heavy construction vehicles travelling to site, and any deliveries of equipment to the site by trucks, will be scheduled to occur during times that avoid morning and later afternoon peak traffic. It should be noted that equipment will be in standard shipping containers and as such no oversized loads are expected. Morning traffic volumes result from a combination of school and commercial traffic, set between 6:30 and 8:30 am. Late afternoon traffic is largely office and commercial based and the afternoon peak is set between 16:30 and 17:30 pm. Large vehicles that could negatively impact traffic flow will be prohibited during the periods identified.

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### 5.2.3. Speed Management

The maximum permitted speed limits for vehicles and SME's travelling on the project site will be as follows:

- Light Motor Vehicles – 30km/h
- All other vehicles including SME's – 20km/h

Speed limit signs are to be erected on the left side of the carriageway and no other sign should be erected on any post carrying a speed limit sign. Sign posts must be clearly visible.

Speed limit signs are to be positioned where speed limits change from the general site speed limit.

Operators must operate according to the prevailing conditions, i.e. taking into account, dust and rain or other adverse weather conditions.

Operators of equipment carrying loads should adjust their speed in accordance with the load being carried to avoid loss of the load or control of the vehicle or equipment.

### 5.2.4. Overtaking

It is a driver's responsibility to ensure that overtaking of another vehicle is only undertaken when permitted and safe to do so.

Overtaking is only permitted on the right-hand side of the road.

No SME may overtake any other SME or Light Motor Vehicle.

No overtaking is permitted at any intersection.

Overtaking of stationary vehicles or SME's should be done with caution.

A vehicle or SME parked on the side of the road should be assumed to be potentially turning out or across the road unless it is displaying hazard lights or is marked with signs or cones as being broken down. It should not be overtaken until positive communication or indication has been established.

Water bowsers may not be overtaken when spraying is in process.

Vehicles that are being towed may not be overtaken.

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#### 5.2.5. Access to hazardous and restricted areas

Access to the project site is permitted only to persons appropriately inducted to the site as per the Site Access Procedure by the appointed security entity. Each person that is present on site shall be appropriately recorded by an access control management system and the visitor register located at the project site office.

Hazardous areas at the project site include, but are not restricted to:

- Areas of high forklift activity
- Drainage areas
- Temporary road works
- Stockpiles
- Laydown areas
- Stores
- Substation

Temporary Traffic Management (e.g. road closures or construction) may need to be enforced in certain areas from time to time around the site to prevent unnecessary access by vehicles and pedestrians. This can be provided either on a once off basis (e.g. using crash barriers), or can be provided regularly for operational purposes (e.g. boom gates).

#### 5.2.6. Safe following distances

Safe following distance varies with the condition and construction of a road surface, the types of vehicles being used and operating speed. The safe following distance is that distance covered in two seconds whilst a vehicle is travelling at a particular speed.

The “two second rule” applies only for alert drivers, driving vehicles in good mechanical condition, fitted with good tyres and driving on a good road surface in good traffic and weather conditions. The safe following distance in the active construction area is 50m. Following distances should be increased in adverse weather conditions.

#### 5.2.7. Road traffic control signage

Traffic control signs are positioned around the project site to control the safe flow and conduct of traffic. They should be complied with as indicated at all times.

All the signs should be supplied in accordance with the SABS 1519 (1,2) specifications. Refer to Appendix A & B below.

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All signs (excluding danger and delineation signs), should be placed at a minimum of 1.5m from the edge of the road at a minimum height of 2.1 meters from the ground (bottom edge of the sign).

Danger ahead and delineation signs should be placed on a height of 600mm (ground to bottom of sign).

Stop, Give Way, No Entry and advanced Pedestrians and Zebra Crossing warning signs should be provided on the left side of the roadway, with a second sign on the right if required to provide additional emphasis.

All road signs are to be made of reflective material so that they are highly visible at night and their daytime colours and shapes are displayed in the dark.

#### 5.2.8. **Parking**

In the case of vehicle breakdowns, the area must be clearly demarcated. Demarcate the vehicle 25 meters in front and the rear with two red triangles and one triangle on the side one meter away from the vehicle.

Parked light vehicles shall have the engine turned off, the park brake engaged and 1<sup>st</sup> or reverse gear selected. All vehicles shall also be reversed parked in the bays and allocated areas. This excludes equipment that is equipped with a Power Take Off that requires the engine to be running. Additional safety precautions, e.g. warning triangles must be in place.

Parking areas shall not be used as storage areas. Where there is risk of vehicles hitting objects behind their backs whilst reversing, wheel stops or "V" drains should be installed. The layout of parking bays should take into consideration the need to accommodate larger vehicles such as the larger four-wheel drives and / or light delivery vehicles.

#### 5.2.9. **Seatbelts**

Seatbelts should be correctly adjusted and worn by the driver and all passengers at all times in a moving vehicle or SME.

The driver or operator should not move the vehicle or SME until all passengers are wearing their seatbelts as well.

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#### 5.2.10. **Overloading of vehicles**

Site specific loading and unloading procedures shall be followed.

Loads should be correctly covered and or secured as required by law. Personnel shall not violate working at height procedure when covering loads.

Loading of equipment shall be carried out without exceeding the limitations of the machinery.

Trucks and other equipment that carry loads should be parked according to the parking standard whilst being loaded and unloaded.

A level working area should be selected. Drivers and operators should remain in their vehicle whilst being loaded.

Operators should ensure that mobile equipment are not overloaded and meet the load carrying capacity of the equipment.


#### 5.2.11. **Give way**

There is no “right” of way as it is every driver, operator and pedestrian’s responsibility to give way to avoid a collision. Drivers and operators should give way to pedestrians at defined and demarcated cross walks. Pedestrians should give way to vehicles and equipment when crossing a roadway away from a defined and demarcated cross walk. Drivers of light vehicles should be prepared to give way to SME’s even at intersections where the mobile equipment is facing a give way sign. Mobile equipment may have limited operator visibility and light vehicles should never proceed through an intersection where they have priority over mobile equipment until they are sure the operator has seen or acknowledges them.

Most intersections on site are controlled with either “STOP” or “Give Way” signs, however where intersections have not been signposted, “STOP” must be adhered to.

All vehicles and equipment should give way to Emergency Vehicles when their flashing lights are illuminated.



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### 5.2.12. Approaching, boarding, disembarking and isolating

Personnel may not board or disembark moving equipment. The equipment must be brought to a safe stop. Any personnel other than the operator may only board or disembark the equipment once they have received authorisation from the operator.

SME's must maintain a minimum 5-meter clearance from each other when loading.

Personnel shall make use of the designated access stairways, ladders etc. If ladder access is available, personnel should face the ladder when using this access.

Footholds or steps that are covered in mud or other material should be cleaned prior to use.

Hand rails should be used as designed and three-point contacts should be maintained at all times. Special care must be taken when tools and other items are carried aboard.

Personnel intending to work in the vicinity of operating vehicles or equipment should control and assess the risk of that activity as per H&S procedures.

Personnel interaction with equipment (loading / unloading, refuelling, directing into work areas), must wear high visibility clothing and meet all other operational PPE requirements.

### 5.2.13. Wide or abnormal loads


An abnormal load Permit to Work shall be obtained for loads that are not directly related to the process and which are considered to have abnormal speed restriction, width, height, weight or shape that would present a hazard to other site traffic.

Wide and abnormal loads should be clearly demarcated, and an escort should be provided in front of and at the back of the vehicle carrying the wide or abnormal load.

### 5.2.14. Overhead power lines

All work shall be done according to the OHS Act and EPC Temporary On-Site Electrical Installations and Electrical Safety standards, which will include the following:

Operation of equipment in the vicinity of overhead power lines shall not commence unless an access permit to do so has been issued by an authorised person nominated by the relevant authority.

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All underground cables have identification markers to indicate their locations.

Excavation work is not to commence within the vicinity of buried cables unless a permit to do so has been issued by the relevant authority.





# Annexure B – Temporary Road Signs




## ROAD TRAFFIC SIGNS

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**TEMPORARY REGULATORY SIGNS**


**Command signs**




**Prohibition signs**




**Reservation signs**




**Comprehension signs**




**Selective Restriction signs - Time**




**Selective Restriction signs - Action**



**Selective Restriction signs - Text Message**




**Do-Restriction signs - Typical examples**

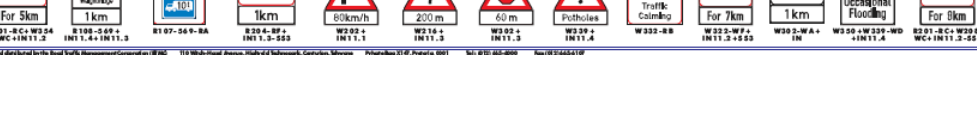


**TEMPORARY WARNING SIGNS**

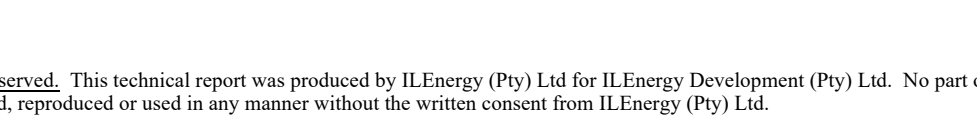
**Road layout signs**




**Direction of movement signs**



**Symbolic signs**



**Hazard marker signs**



**TEMPORARY INFORMATION SIGNS**



**TEMPORARY GUIDANCE SIGNS**



**TEMPORARY COMBINATION SIGNS**



**COMBINATION SIGNS**

