Sports Lighting Best Practice Guide

This guide has been provided to assist organisations preparing to apply for Department of Tourism, Innovation and Sport (DTIS) or other funding, with **information on sport lighting best practice.** This guide is intended to assist organisations in the delivery of Sports Lighting projects.

GUIDE NOTES:

The Funding Recipient is obligated to ensure their project meets legislation and all governing authority's requirements.

The Funding Recipient also needs to be aware of the Department's funding program guidelines and requirements including but not limited to compliance with the lighting standards set out in the Australian Standard AS2560.2:2021.

Project Planning and Preparation Considerations

Project Scoping	Considered
Do you know exactly what you want to achieve and over what timeframes for delivery and completion?	☐
Do you know the activities and their standards (if more than one) of lighting required at the site i.e., training, club-competition, or semi-professional play? For multi-use facilities, it is important to be aware of any specific requirements for each activity.	☐
Have you referred to appendix F of the program guidelines to confirm the applicable lux levels for your sport and grade of play. These levels cannot exceed those specified in appendix F and are based on approved National and International standards e.g., AS 2560.2:2021 and EN 12193:2018 for sports not covered under AS 2560.	☐
Have you considered if usage of the lights will be available (for hire) to other user groups or individuals?	☐
Do you have the expertise to deliver the project and what impact will it have on current operations? *Note: For projects with a total project cost of $200,000 (ex GST) or more, an independent and qualified project manager will need to be engaged through a public tender process.*	☐
Is the project proposed to be undertaken in multiple stages?	☐
Have you considered what impact this project will have on your organisation's current operations? Can the work be scheduled outside of the playing season?	☐
How much will it cost to maintain and run when completed and can you afford it over the long term without subsidies?	☐
Have you sought input from a suitably qualified lighting designer (M.IES or F.IES or RLP) to assist with planning and costing and to ensure that it meets with the sports and lighting standards including obtrusive lighting (AS 4282:2019)?	☐
Have you considered that electrical infrastructure including switchboards, power and control cables etc. will need to be checked by an electrician or electrical engineer, and any costs will need to be factored into the total project cost?	☐
Have you reviewed and considered the Appendix F of the program guideline relating to the lux levels for community standards for your activity?	☐

Site Considerations	Considered
Depending on who is the owner of the land, are any permissions required to undertake the work?	☐
Is the development on a former landfill site? If so, this is likely to require additional engineering design for poles and footings.	☐
Is the development on a flood plain? Electrical switch and control gear will need to be installed above the flood level or installed in IP67 rated cabinets.	☐
Does the development have any other unsuitable soil conditions e.g., rock or high-water table?	☐
Have you considered obtrusive light (light spill)? Refer to AS 4282:2019 (Control of the obtrusive effects of outdoor lighting) for further detail. This is a mandatory requirement for any lighting design).	☐

Have you or do you need to consider the potential impacts of your installation on aviation? 1. Venues within 6 kilometres of an airport must seek and comply with the airport operator's determination on obstacle limitation surface requirements (OLS). 2. Depending on the height of the poles and the lux levels you may also need to comply with: a. the Civil Aviation Regulation 1988 Reg 94 regarding "Dangerous Lights" Civil Aviation Regulations 1988 (legislation.gov.au) Submit a development application submission form to Airservices Australia. (Please note this is in addition to your application for development application through your relevant local Council) DEVELOPMENT APPLICATION SUBMISSION FORM (airservicesaustralia.com)	☐
Has consideration been given to the wind loading for cyclonic conditions and earthquakes if applicable to the project area?	☐
Has ecological consideration been given to the limitations placed on artificial lighting if your venue exists close to significant habitat areas?	☐
Protected trees – design will need to be adjusted to avoid impacting the trees as trimming will not be permissible.	☐
Does the site have a history of flooding? **Yes** – LED drivers and electrical switchgear must be either mounted higher than the any flood levels of the last 25 years. Alternatively, these all need to be mounted in IP67 rated cabinets to prevent water ingress even in a flood event. **No** – Drivers can be mounted either in the pole or in cabinets mounted on the pole above easily accessible height (requires ladder access to minimise vandalism)	☐

Council Approvals	Considered
Are the facilities currently lit for sport use? **Yes -** Development approval may not be required but this will depend on increases to external lighting intensity (lux levels) or to the replacement of poles (requiring new footings) or pole heights. DA will not be required for internal lighting changes. **No -** Development approval will be required for new poles and footings as well as compliance with AS 4282:2019. Council will advise of requirement through the application process.	☐

Upgrades or Relocating existing lighting	Considered
Has an audit / engineering inspection been undertaken on the existing infrastructure? A lighting audit should be undertaken to establish current lighting (lux) levels. **A structural engineering assessment will also need to be undertaken to determine:** • condition of the existing poles • capacity for poles/cross-arms to carry the additional lights (if any) • An electrical assessment will also need to be undertaken to determine the capacity of the existing electrical infrastructure (transformer, switchboard, distribution boards, cables and conduits) to accommodate new and or additional lights **Is a dilapidation report required and who from?** **I**f installing new lighting to a greenfield site a report is unlikely to be needed however installing lights into an existing indoor facility or pool complex more than likely would. *Note: for new sports lighting projects, organisations should consider the site's existing electrical supply capacity as new transformers or supply service may be required.*	☐

Structural certification For existing poles, certification will be required from a registered professional structural engineer to confirm the reuse/relocation of poles is possible. This will need to confirm the structural integrity of the poles as well as the capacity for the additional weight and sail area of the new lights. Drivers integral to the luminaire could increase both the weight and wind sail area of each luminaire. To do this the structural engineer will need to know the weight, size and number of luminaires and drivers (if applicable) to be mounted on the poles. As such, an illumination design will need to be completed first as this will also determine if the existing poles for reuse are of sufficient height. This is particularly important when upgrading lighting from metal halide to LED, and new cross arms are likely to be required for each pole. **Form 15 Requirements** A professional certifier is required to provide advice on Form 15 requirements. Generally, a pole manufacturer or a registered structural engineer will not need to provide a Form 15, however confirming this requirement is advised.	☐
Electrical infrastructure including switchboards, power and control cables etc. will need to be checked by an electrician or electrical engineer. In remote locations it may be the manufacturer's recommendation that luminaires are each connected via single-phase as against 3 phase used in many high-capacity luminaires. Therefore, phase connections should be made to balance the loads as evenly as possible over all phases of supply.	☐

Obtaining Project Costs and Quotes	**Considered**
Will the project be tendered as a design and construct (D&C) contract or as a traditionally delivered contract? It is expected that the quotes sought and obtained will mostly be based on a design and construct (D&C) delivery methodology rather than a traditional design, quote and then construction. It is therefore imperative that the companies/individuals requested to provide a quote are provided with a copy of any applicable funding guidelines as well as related fact sheets and this best practice guide. If D & C – ensure that the tenderers are provided with a detailed performance specification of what is required, and any relevant grant guidelines if applicable.	☐
For projects delivered with funding from Qld Government in excess of $200,00 (excluding GST), a public tender process conducted in accordance with the principles of the Queensland Government Procurement Strategy will be required.	☐
Traditional delivery - See post consultant engagement and design section below.	☐
Poles	
It is recommended to initially have a discussion with the landowner and/or council on their knowledge of the poles and potentially any knowledge of the soil type at the facility. Noting that soil types can differ across the site of a facility. Any background knowledge may assist in you considering any potential additional costs.	☐
Has soil/geotechnical testing been undertaken at each proposed light pole position? **Yes –** ensure the results have been used to develop the pole footings design. **No –** tendering sports lighting contractors will require this information to provide to professional structural engineers/pole suppliers to determine the appropriate footing design for the poles and the chosen luminaires. • Additional costs in pole footings are likely to be incurred where adverse soil conditions are experienced e.g., sandy soil, landfill sites or highly reactive soils. • A result indicating contamination may trigger the involvement of the Contaminated Land Unit within local government and further approval/building conditions may apply. • The location of concrete, rock, asbestos or other items such as buried services during installation will trigger variations and may increase costs.	☐

It is recommended (if possible) that soil/geotechnical investigations for pole footing designs are either: 1. Recommended option - sought prior to obtaining quotes and these results provided to each organisation quoting to ensure consistency of comparison. This will allow tenderers to have detailed footing designs undertaken and minimise the possibility of cost blow out once contract is awarded. Costs for testing will be incurred under either option 1 or 2. Undertaking these prior to tender will reduce overall costs by elimination on design uncertainty and contractors loading for undertaking the investigative work. Costs will not be covered under the DTIS funding. 2. Not recommended option - tendering / quoting contractors to provide a provisional sum in the quotation based on an estimate of the cost of geotechnical investigations and the associated footing construction costs. Costs of these investigations post application will not be covered under the DTIS funding other than through the provisional sum and or contingency allocation included in the application for funding. Differences between the provisional sum and the actual costs will therefore need to be absorbed by the contractor or the club.	☐
Has a site-specific footing design been obtained prior to seeking quotes for construction and installation? Yes – ensure the design is provided to all companies quoting/tendering on the works and ensure the designs have been prepared by an appropriately qualified structural engineer. No – any adverse soil conditions found during the works are likely to generate a variation to the contract and substantially increase the cost of works. This will need to be funded out of the project contingency. Ensure that the contractor includes a footing design in their scope of works to reduce or eliminate the likelihood of expensive variations in the footing design as these will be at the club's / organisation's cost if insufficient contingency is available.	☐
Electrical	
Are there any requirements for external power points at the base of light poles or on switchboards for external use? Yes – ensure that the number and location are provided to the electrical scheme designer including single or 3 phase and any control requirements e.g., timer controlled. No – consider carefully as power points at facility extremities are invaluable during major events. Consider any previous floods on site and height of the water. It may be advantageous to locate any power points/switches/transformers above the flood water height or be rated as IP67 to prevent water ingress	☐
Are there any requirements for public address speakers at some or all the light poles and an audio-visual system at the clubhouse? Yes – ensure that the number and location are provided to the electrical engineer No – consider carefully as speakers at remote points of the facility can be invaluable during major events.	☐
Has consideration been given to installing the LED drivers remotely from the luminaires? All LED luminaires require drivers to operate, these can be internal to the luminaire, luminaire mounted, mounted remotely such as in the pole, in pole mounted cabinets or in some cases up to 200m away from the actual luminaire in a central cabinet. Luminaires that incorporate integrated drivers are not recommended and it is advisable that any tender specification / quote request stipulates that drivers must be mounted at an accessible level for ease of replacement and repair. Luminaire mounted drivers will require the hiring of height accessible equipment to undertake any driver related work and these usually are the main source of failure in most LED installations.	☐
Is there a requirement for a new/upgraded power meter e.g., smart or 3 phase meter? Yes – Ensure any cost is included in the contractor's quote.	☐

Is there a requirement for a new/upgraded supply line or transformer? Yes – Ensure that any of the contractor's direct costs are included in the contractor's quote (if applicable). Note that network costs will be a direct contract with the energy distributor (Energex or Ergon in QLD) rather than through the contractor. Contractor will undoubtedly also incur costs, and these will need to be reimbursed by the club / client / applicant. Yes – Ensure that you allow generous timeframes for the installation/upgrade as this is generally measured in months and not in weeks	☐
Note: Grant funding often only applies within the lease boundaries and any work required between the boundary and the mains may be at the organisation's own cost.	☐
Scope of Work Considerations	☐
Please see *Appendix 2 – Examples: Scope of Work Considerations* for a list of items that could be included in a quote – not all will be applicable to all projects however should be considered.	☐

Conceptual Design considerations	Considered
Refer to the section of the Australian Standard for Sports Lighting (AS2560.2:2021) applicable to the sporting code.	☐
Have you engaged the services of a professional lighting designer (M.IES, F.IES or RLP) with experience in sports lighting to design the scheme? (see qualification requirements below under Best Practice Lighting Design)	☐
Have you engaged the services of a registered structural engineer or reputable pole manufacturer for the design of the pole and associated pole footings?	☐
Will the pole manufacturer also be supplying the footing cages and foundation bolt assembly (including rag bolts)?	☐
Do you have a survey drawing of the site showing levels, dimensions and layout?	☐
Have you prepared a satellite image view of the applicable infrastructure to be illuminated?	☐
Have you determined the lux level/s of lighting required for your project and is your desired level acceptable average illumination levels under this program?	☐
Have you specified the specific playing area of the site to be lit under this project on a site layout?	☐
Is the facility intended to be multipurpose/multisport? If yes, are there any specific areas that require different levels of lighting to accommodate a different sport or lux level? e.g., AFL and cricket or softball in the corner of a football field. Regarding lux levels AFL requires 100 lux match practice while cricket requires a higher level up to 300 lux. If yes has the area requiring the alternative lighting level or applicable sport footprint been clearly indicated on the site layout? A calculation grid will be required for each of the sports required.	☐
Has consideration been given to using alternative energy sources rather than just mains power? Yes - Has a cost benefit analysis (CBA) been undertaken on using solar and battery storage to reduce mains power needs? Has it been clearly evidenced that initial capital outlay will be recouped within the systems expected lifetime, say 10 years? Is it expected that surplus energy will be exported to the grid and if so, has this been included in the CBA above?	☐
Has consideration been given to bird proofing options as part the design? Appropriate bird proofing (flexible metallic conduit and fittings or similar) should be installed when there are exposed wiring / cables needing protection from bird damage and severe weather events. Alternatively, if the issue is birds roosting or nesting on luminaires or pole mounted infrastructure than this can be resolved using bird spikes. This will prevent fires and prolong the life of the luminaires.	☐

Best Practice Lighting Design	Considered
A lighting design should contain the following components:	
Be developed by and signed off by a member of the Illuminating Engineering Society (I.E.S) of Aust. & NZ with a grade of M.I.E.S (Member), F.I.E.S (Fellow) or RLP (registered lighting professional). *Note:* Electrical engineers are only qualified to develop a lighting design if they also have the appropriate membership of I.E.S (Member, Fellow or RLP)	☐
Comply with the following standards: ✓ AS 2560.2:2021 Sports lighting, Part 2 Specific applications and AS 2560.1-2018 Sports Lighting Part 1: General principles. If applicable to the sport or activity as not all sports are covered in this standard. ✓ EN 12193 2018 Light and Lighting – Sports lighting. This standard is only applicable to sports not covered under AS 2560.2:2021. ✓ AS 4282-2019 Control of the obtrusive effects of outdoor lighting	☐
Developed design must contain identifying information such as the location and who the design is for e.g., the organisation/applicant's name	☐
Indicate that the design, materials and works undertaken comply with Australian standards.	☐
Supplied design documentation must include the designer's name, company/organisation (if applicable), contact details including, street address, telephone numbers, website/email address and IES membership number and level. Note: designs undertaken by levels of IES membership such as associate or technician will not be accepted. Membership level needs to be visible and evidenced on IES membership website. Sports illumination designs developed by non-Australian and NZ IES members but endorsed locally will not be acceptable and all designs must be developed in Australia/NZ by IES members.	☐
Include a *Calculation Grid/ Illumination Results Sheet* showing the compliant design. A calculation grid/ illumination results sheet is created to calculate and check the average horizontal maintained illuminance in the total playing area (TPA). A calculation grid is required for each of the switching levels included in the application e.g., 50 lux and 100 lux if switching to various levels is required	☐
Include an *Obtrusive Light Analysis & Compliance Report* This report shows that the design has minimised any obtrusive light. Obtrusive light may be defined simply as unwanted light. More specifically, it may include light that falls onto the property of others, sometimes called spill light or light trespass, and glare, or excessive light from luminaires that hinders vision. An Obtrusive Light Compliance Report will be based on the highest lux level in the design suite and in most instances will be on a single design page.	☐
Does the design have the light poles offset as per AS2560.2:2021? Yes - Confirm if any additional distance is required to suit the sport prior to accepting the design. No - Obtain confirmation in writing from the sport's governing body of the minimum safety distance required from the principal playing area (PPA) activity boundary.	☐
Does the height and configuration of the poles meet the requirements of AS2560.2:2021. This should be determined by the lighting scheme designer.	☐

Has consideration been given to accommodate desired future lighting level upgrades? Yes - Ensure that the designed solution provides for known and likely future upgrades? This needs to include structural capacity of poles, cross arms, switchboards, switch gear and cable infrastructure. Depending on timelines consideration needs to be given to transformer/supply line upgrades but these may not be necessary at this stage. Please note costs for any future proofing will need to be borne by the applicant as the application will limit funding to provision of a lighting scheme to the program agreed levels only. Applicant will need to clearly indicate the additional costs involved in exceeding the departments agreed lux thresholds. No - No upgrades are intended on this project.	☐
Will the new or increased lighting have an impact on surrounding residences? Yes - An obtrusive light compliance report will be required as part of the lighting design. This will demonstrate compliance with AS4282:2019 - Shields (rear, side and louvres) may be required to be fitted to the lights to cut off or control obtrusive light. No - A obtrusive light compliance report will still be required to demonstrate compliance with AS4282:2019 Effects of Obtrusive Lighting.	☐
Has the effect of vegetation been considered? Yes – It is not permissible to use trees and other vegetation for the lighting design to conform to AS4282:2019. No - The positioning of the poles must be adjusted to avoid vegetation and to prevent any possible future 'shading' of the lights.	☐
Are all proposed luminaires appropriately IP and IK rated? Yes - Does the luminaire have an IP (ingress protection) rating minimum of IP65? Yes - Is the IK (impact rating) appropriate for the environment e.g., IK08 or IK10? No – Alternative luminaire needs to be sought for your installation that meets these minimum levels. *For further details on these ratings, please refer to: Appendix 1*	☐
See Appendix 2 for an Example Lighting Design	☐

How to obtain a lighting design

There are three main options available to obtain a Lighting Design that includes a calculation grid/ Illumination results sheet and the obtrusive light analysis & compliance report: 1. Contact preferred/possible luminaire provider and request that they develop an appropriate design for your facility. In most cases this will be at no charge but it's likely suitably licensed contractors will need to obtain the design from the luminaire provider directly to ensure that they purchase the fittings through them. You will however need to provide the luminaire supplier/manufacturer with a Google earth / Nearmap / Qld Globe image of the site which clearly shows adjacent infrastructure including residences and commercial premises if applicable. 2. Engage an M.I.E.S / F.I.E.S / RLP to develop a design on behalf of your organisation. This will come at a cost to your organisation which cannot be claimed as part of your project costs if your application is successful. 3. Request quotes from suitably licensed contractors who will each in turn get designs developed to suit the luminaires of their preference and experience. Contractors may be reluctant to incur the costs without knowing if they have the contract.	☐

Warranty Specific Considerations	Considered
Quotes and Final Contract Documentation should include the following:	☐
Specification of a defects liability period where the contractor will be responsible for replacing faulty components (usually 12 months). Note this does not negate product warranty conditions.	☐
Provision of manufacturers' warranties for poles, luminaires, fixtures and fittings, control systems, switchgear and switchboards.	☐
Provision of a warranty for the installation of light fittings (different to the elements above)	☐
TIP: Check all warranties are for the benefit of the recipient organisation and not only to the contractor or supplier. Quotes for equipment not procured directly through Australian manufacturers/authorised representatives must provide copies of the warranties together with the quotations.	☐
TIP: All components utilised in the delivery of a sports lighting project should be procured and warranted through and by their respective Australian manufacturers/authorised suppliers/ authorised distributors with Australian based warranties to ensure warranty conditions are maintained throughout the warrantied life of the product; and Products with international warranties which have not been confirmed as valid by Australian based manufacturers, authorised suppliers or authorised distributors and products that do not have a manufacturer's warranty for the benefit of the sporting club/organisation, should not be considered.	☐
TIP: Best Practice is that warranty conditions match expected life of product e.g., if product has expected life of 15 years and comes with a lifetime warranty then this should also be 15 years. Warranties of at least 5 years should be provided on SSL (LED) luminaires. • Most reputable manufacturers will provide a 3- or 5-year warranty with the option to extend the warranty at a cost of around 5% to 7.5% of purchase price per annum. • Warranty must also cover chips, drivers and the luminaire housing and mounting brackets. • You generally will not get a warranty matching the stated hours expected lifetime. Note: *(SSL stands for Solid State Lighting which is the technically correct term for LED lighting. It covers a range of LED types such as semiconductor light emitting diodes (LEDs) organic light emitting diodes (OLED's) and polymer light emitting diodes (PLED's).*	☐
TIP: Preferred luminaires should be NATA certified or their international equivalents. Ensure copies of certificates are received. Note: *NATA is Australia's leading national accreditation body. NATA's role in lighting is to confirm that luminaires sold in Australia, meet acceptable benchmarks for quality, longevity, electrical safety and achieve what the manufacturer says they achieve.*	☐
TIP: Is it clear in the contract documentation how to action a warranty claim if required?	☐

Pre-Construction Considerations

Confirmation of Scope	Considered
A revised lighting design compliant with AS 2560.2:2021 and AS 4282:2019 will be required for any of the following changes or updates to the original (submitted) design: - pole heights - luminaries - lux level - location	☐

Has a FINAL copy of the proposed lighting design (Calculation Grid and Obtrusive light compliance report) been provided by a member of the Illuminating Engineering Society (I.E.S) of Aust. & NZ with a grade of M.I.E.S (Member), F.I.E.S (Fellow) or RLP (registered lighting professional). This is required for each switched level of lighting and needs to demonstrate compliance with the relevant standards. Design completion by M.I.E.S or above is the only acceptable standard under all SR capital grants programs. Design by an electrical engineer is not acceptable unless they also carry an M.I.E.S or above rating. Yes - Copy of the complete design documentation must be provided with the application to Council and to Sport and Recreation to comply with pre-construction funding agreement requirements. No - All above documentation will be required before Council can provide permission for the project and before Sport and Recreation will give approval to commence construction.	☐
Consider the importance of advising nearby residents of the upgrade prior to construction. This could be done through on-site signage or letter box drops. This will minimise complaints to the landowner if residents are aware of what is happening on site.	☐

Lighting control	Considered
Consider requirements for the lights to be switched to different lux levels. This will reduce unnecessary expense. Different areas of usage (e.g., half field only or AFL vs Cricket). Different lighting levels to correlate with activities being undertaken (i.e., training v competition).	☐
Consider the best location for: - Lighting main switchboard - consider the future access needs by club personnel and electricians. - Lighting control box - consider proximity to entry/exit points/car park and accessibility by non-regular user groups as well. - Consider locating electrical infrastructure high enough to avoid any damage from potential flooding events.	☐
Consider the preferred light switching mechanism? Choice of switching methodologies include traditional switches, electronic control (touch panel) or mobile app. The inclusion of a user friendly, app-based lighting control system is recommended. If manual switches, consider the use of timers to automatically switch lights off after pre-set run times.	☐
Consider the preferred access to the lighting controls? • Padlock or keyed access - consider who should have access and the need to provide dedicated keys to other users without the ability to access other facilities. • PIN pad or swipe/touch card entry • Mobile phone app – no special site access necessary • Manual override to account for malfunction or power failure	☐
Is there a need to record electricity consumption? e.g., different user groups or to separate electricity consumption used on the playing area Yes - options could include sub-meters, mobile phone app, tokens, PIN, computer programming or other. Discuss options with the lighting designer.	☐

Financial	Considered
Do you have adequate budget or financial backup resources to complete the project? - Do you have an estimate of cost to complete the entire project including professional fees for lighting designers, engineers and the project manager? - Have you included an allowance for escalation of costs up to the possible construction start date? Currently this is running at about 1% per month. - Have you included a contingency allocation to cover issues such as problematic soils or rock, unforeseen issues and eventualities? At design development stage this is recommend being around 10% and falling to 5% on contract award.	☐

Have you obtained estimates of cost for the following items? - Running costs of the lights (consumption) at each of the lighting levels ($ per kWh). Include service fees/supply charges and meter fees if applicable. - Maintenance and cleaning schedules and costs. This will be dependent on the type and technology of the luminaire used, pole type as well as the environment the facility is in.	☐

Project Management	**Considered**
Ensure that the following are undertaken prior to the commencement of the project: Consider engagement of a project manager with experience in managing lighting projects and working with Council approval processes.	☐

The preferred timing of the works (milestones) is identified and relayed to the contractor through a desired program of works.
• avoid peak usage periods of the facility (out of season is best option).
• allow time for approval process through local government.
• allow long lead times for:
  ○ transformer or supply upgrades as this can be more than 6 months (if applicable)
  ○ poles ±12-17 weeks and luminaires (Could be 16 weeks plus)
Consider that the rectification of damaged playing surfaces can take 8 weeks or more until activities can resume.
	☐

Meet with the contractor at least 2 weeks in advance of the construction start date to discuss:	**Completed**
• suitable access times	☐
• desired vehicle paths, entry and exit points	☐
• Consider trees on site; an arborist from the local government may be required to provide approval to trim trees if required for vehicle/cherry picker access.	☐
• potential for damage to playing surfaces	☐
• mechanisms to mitigate playing surface damage	☐
• adjustments to irrigation to ensure ground stability	☐
• location of access pits to ensure compliance with SSO.	☐
It is advisable that photos are taken of the facility in its pre-construction condition, particularly in areas where construction vehicles are likely to access, or vegetation has to be moved or trimmed. Confirm with the contractor prior to construction what the remediation process will be for any damage that occurs.	☐
Access to the facility, onsite amenities, site security etc. need to be confirmed directly with the contractor. This should include end-of-day procedures and lock-up.	☐
Ensure that the following are undertaken during and at the conclusion of the project:	**Completed**
Any keys to locks are returned by the contractor, pin codes changed, or electronic access revoked.	☐
Any infrastructure removed by the contractor is replaced - e.g., bollards, goal posts.	☐
Post construction meeting with contractor to assess park surface condition and any required rectification works	☐
All other items required as part of the contract are fulfilled.	☐
Ensure contractor provides a completed Compliance Certificate for Building Design or Specification (Form 15) on completion of the project and before any retention monies are released.	☐

Post-Construction Considerations

Post-Construction Documentation	Completed
At a minimum the following documentation should be available at post-construction	
Provision of all applicable warranty information (if not received yet)	☐
Manual on how to operate the lights and all the related setting. This can be in the form of Instructions and diagrammatic “how to” guide contained in the switchboard. This will naturally vary depending on the lighting control system chosen.	☐
Final commissioning of the lights, including lux plots across the activity areas for all lighting levels (if applicable). This will need to be undertaken by an independent lighting MIES or FIES contractor and NOT the contractor that has installed the lights. Please ensure that this cost is budgeted for.	☐
Certification by an independent lighting designer that the installation meets the required Australian Standards. In this regard it is recommended that consideration be given to a suitably qualified lighting specialist (M.I.E.S or F.I.E.S or RLP) not involved in the construction of the lighting system to ensure total independence.	☐
Provision of ‘as-constructed’ documentation for your records and future maintenance/replacement needs.	☐
Other documents that may be applicable at post-construction including photos, permanent signage and certificate of practical completion.	☐

Asset and Financial Management	Completed
Does the club have an asset management plan in place?	
Yes - Add the new lighting to the asset register and specify the maintenance activities required, frequency of and approximate costs for all elements of the lighting.	☐
No - Prepare an asset management plan as per ‘Yes’ and add any other infrastructure controlled by the club.	☐
Is the club making regular deposits into a facility sinking fund?	☐
Yes - Ensure that the contributions are increased to accommodate the maintenance and replacement activity costs identified against this new project.	☐
No - Establish a sinking fund and make regular contributions to cover maintenance and replacement of identified components against the replacement schedule.	☐
Is the organisation seeking external funding to undertake the project?	
Yes - Provide sufficient lead time for the design to be completed and an estimate of cost prepared prior to the funding submission.	☐
Yes – Concept documentation completed with final contract documentation to be finalised if funding application is successful.	☐
No	☐

Appendix 1: Acknowledgements, Resources and Reference documents

Reference	Description
Australian Standard AS 2560 Series including Sports Lighting, General Principals and Sport specific versions	*When participating in a variety of sports, Standards play an important role in providing the lighting needed to ensure a safe game.* *AS 2560.1:2018 Part 1: General principles* *This Standard contains recommendations and requirements for the lighting of places, both indoors and outdoors, where sport is played. It includes general principles and recommendations for sports lighting, descriptions of suitable types of lighting equipment, and requirements regarding methods for the assessment or measurement of sports lighting installations.* *This Standard is intended to be read in conjunction with the applicable section of AS 2560.2:2021 covering the sport of interest. Taken together, these Standards cater for the requirements of different levels of play, e.g., recreational, training, club, national and international, and provide for the visual requirements of participants, officials and spectators, as appropriate.* *AS 2560.2.2021 Part 2: Specific applications* *This document contains design and performance requirements and recommendations for the lighting of specific outdoor and indoor sports areas. It also provides recommendations for spectator areas and safety lighting.*
Australian Standard AS 4282-2019 – Control of the Obtrusive Effects of Outdoor Lighting	*This Standard sets out requirements for the control of the obtrusive effects of outdoor lighting. It includes limits for the relevant light technical parameters to control these effects. As the obtrusive effects of outdoor lighting are best controlled by appropriate design, this Standard is primarily applicable to new installations or where luminaires are being replaced or upgraded (e.g., increase in lux levels or upgrading form Metal Halide to LED). This Standard specifically refers to the potentially adverse effects of outdoor lighting on nearby residents (e.g. of dwellings such as houses, hotels, hospitals), users of adjacent roads (e.g. vehicle drivers, pedestrians, cyclists) and transport signalling systems (e.g. air, marine, rail), and on astronomical observations.* *NOTE: Appendix B provides guidance on the documentation that may be required by planning bodies, in order to facilitate assessment of a proposed lighting scheme.* *The Standard does not apply to public lighting, as defined in Clause 1.4.11, unless specified by the relevant authority.* *This Standard does not apply to environmental impacts associated with the daytime appearance of outdoor lighting systems, including their support structures.* *Due to the diversity of biota throughout Australia and New Zealand and minimal information on thresholds and behavioural response of species to artificial light, the effect of obtrusive light on fauna is not covered within the normative parts of this Standard.*
European Standard EN 12193:2018 Light and Lighting – Sports Lighting	*The use of the EN 12193:2018 standard is only acceptable where the sport concerned is not covered in AS 2560.2:2021. It is not to be used as an alternative. Light and lighting - Sports lighting This standard specifies lighting for those indoor and outdoor sports events most practised in Europe. It provides lighting values for the design and control of sports lighting installations in terms of illuminances, uniformity, glare restriction and colour properties of the light sources. All requirements are meant to be as minimum requirements. It also gives methods by which these values are measured. For the limitation of glare, it also points out restrictions on the location of the luminaires for specific applications.* *When and if using EN 12193:2018 compliance with AS 4282:2019 remains mandatory and is not negated by the use of the European standard for lighting design in Australia.*

Impact Rating (IK) rating chart	*The IK Code (otherwise known as Impact Protection Rating) consists of the letters IK, followed by two digits. These two digits help us to identify the level of protection a piece of equipment offers.* *As defined in the international standard IEC 62262:2002 and IEC 60068-2-75:1997, it classifies the degrees of protection provided by enclosures for electrical equipment against external mechanical impacts.* *This standard specifies the way enclosures should be mounted when tests are carried out, the atmospheric conditions that should prevail, the number of impacts and their (even) distribution, and the size, style, material, and dimensions, etc. of the various times of hammer designed to produce the energy levels required.*
Ingress Protection rating:	*The IP rating is an international standard that tells you how resistant a device is to solids and liquids. The first digit defines protection from dust, and the second digit defines protection from water*

Acknowledgements, Resources and Reference documents

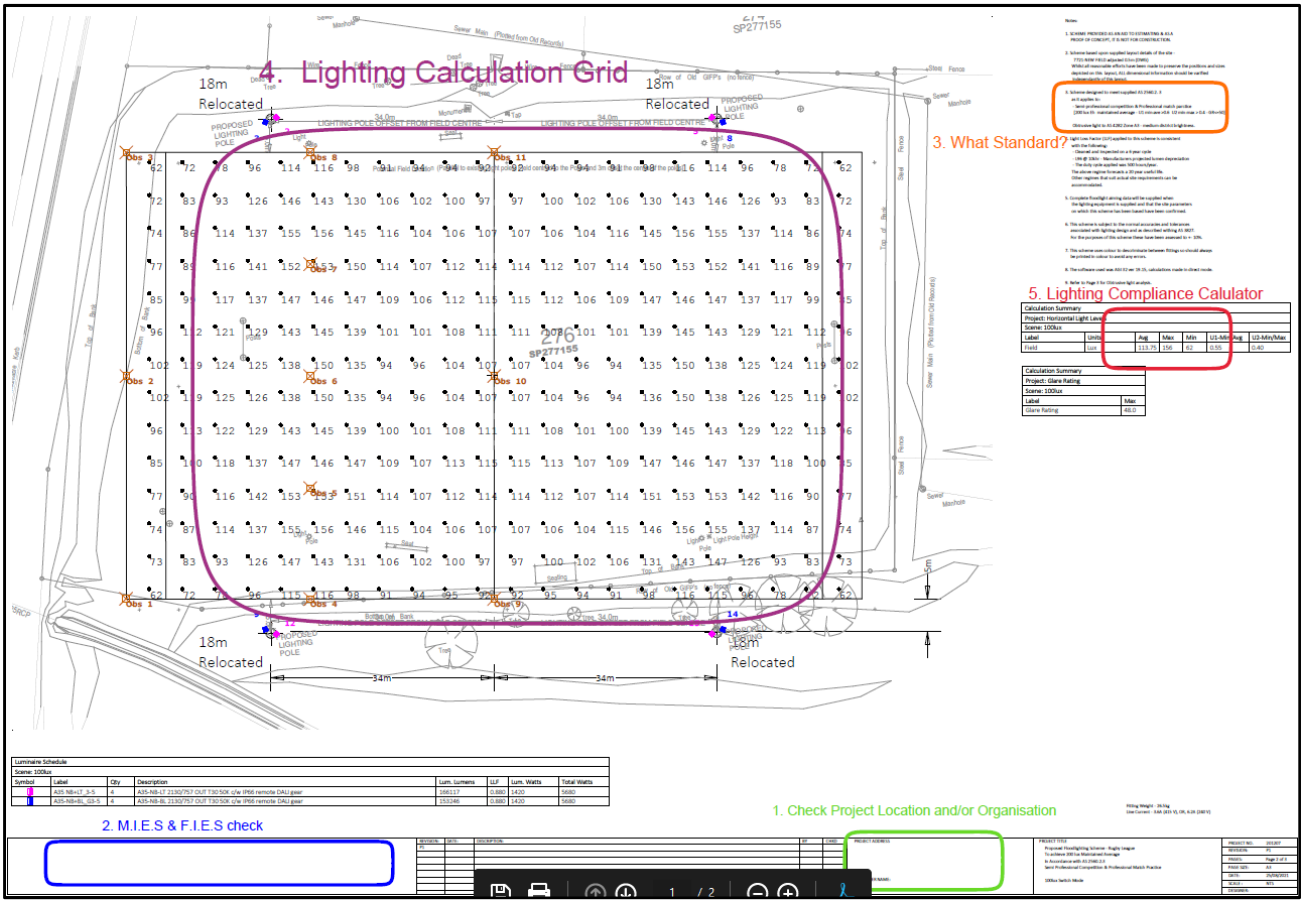
1. Australian Standard AS 2560.2:2021 including Sports Lighting, Part 1 General Principals
2. Australian Standard AS 4282-2019 – Control of the obtrusive effects of outdoor lighting
3. Peter Jones, - Peter Jones Lighting
4. European Standard EN 12193 :2007 Light and Lighting – Sports Lighting
5. Moreton Bay Regional Council – Sport and Recreation Club Manual, Sports Field Lighting Checklist
6. Civil Aviation Authority MOS139 – Manual of Operating Standards Part 139 – Aerodromes

Appendix 2: Examples

Scope of Works Considerations

Scope of Works Considerations	Completed
Ensure the following as a minimum, are clearly defined and included in the scope of works for contractors to quote/tender on.	
Structural engineering certification of footings and poles.	☐
Any other costs associated with Works Permit/Approvals	☐
Electrical engineering design and sign-off.	☐
Pole type/s, heights and locations as per the supplied lighting design.	☐
Soil testing and footing design (if not completed earlier).	☐
All light fittings as per the supplied lighting design.	☐
All required electrical infrastructure including any new or upgraded connections to the site supply point. (e.g., switchboards, cables, sub-meters, etc.).	☐
All switching mechanisms and access to light control systems including installation of smart phone app infrastructure if selected.	☐
All Energex/Ergon fees, including supply upgrades and new meters (if applicable and if cost effective).	☐
If applicable the removal and disposal of existing lighting infrastructure.	☐
Tree trimming and removal of debris.	☐
Rectification of any damage to playing surfaces.	☐
Instructions and diagrammatic “how to” guide to be contained in the switchboard. This will naturally vary depending on the switching methodology chosen.	☐
Final commissioning of the lights, including lux plots across the activity areas for all lighting levels (if applicable).	☐
Certification by an independent lighting designer that the installation meets the required Australian Standards.	☐
Confirm payment schedules including any options to finalise payment until all post-construction documentation is provided and all damage is repaired.	☐
Provision of ‘as-constructed’ documentation for your records and future maintenance/replacement needs.	☐

Lighting Design Example



Quote Example

Applicants are expected to provide a Quantity Surveyor (QS) Estimate or three (3) comparable written Quotations.

The example below outlines a quotation typical of a Sports Lighting Project. Applicants are encouraged to ask their supplier to provide this information to achieve a successful project outcome.

QUOTE

[COMPANY NAME, LOGO & ABN]	[COMPANY CONTACT DETAILS]
[COMPANY CONTACT PERSON]	
To: *Contact name of organisation* *Location*	Quote No. Date: Completed by: Expiration Date:
Project Scope Details: The following is included in your quotation	
Soil Testing & Footing Designs	**$**
Certification	**$**
Underground Conduits, Pits & Trenching	**$**
Sub-Mains To All Poles & Lighting Control	**$**
Poles & Footings	**$**
Switchboard Works	**$**
Light Fittings & Associated Equipment	**$**
Testing & Commissioning	**$**
Contingency Allowance	**$**
Escalation Allowance	**$**
SUBTOTAL	**$**
GST	**$**
TOTAL	**$**
Exclusions / Notes	
Acceptance Of Quotes	
Invoicing Details	

Other items that may be considered in a quote

(Note: this is not an exhaustive list and may vary between contractors)

Warranty Conditions

Terms & Conditions

Progress Payments

Increased & Cancellation Costs

Ownership

Excepted Risks

Practical Completion And Defects Liability Period

Access Details

Working Hours

Damages

Insurance

Storage

Import Control Customs Duty Notices

Patent And Copyright Dispute Resolution

Product Specifications