

SC6.2.3 Planning scheme policy 3 - Environmental management

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Part 1 Introduction

1.1 Title

This planning scheme policy may be cited as Planning scheme policy 3 - Environmental management.

1.2 Purpose of this planning scheme policy

1. The purpose of this planning scheme policy is to assist with the implementation of the Logan Planning Scheme 2015 by identifying:
 - a. information requirements for the preparation and submission of:
 - i. an ecological assessment report associated with development applications affected by the Biodiversity areas overlay or Waterway corridors and wetlands overlay;
 - ii. an environmental offset report for development applications or requests for code assessment involving operational work - clearing of native vegetation;
 - b. the standards where an environmental offset relating to matters of local environmental significance is applicable to:
 - i. protect, enhance and rehabilitate habitat values, ecosystem processes, biodiversity corridors and koala habitat and movement;
 - ii. achieve a net gain in native vegetation, native trees and native habitat trees;
 - c. the standards for noise emission and absorption, air, light, radiation and vibration to protect:
 - i. the amenity and character of a zone and precinct;
 - ii. the health and safety of the community;
 - d. the standards for waterway and wetland enhancement works.

1.3 Structure of this planning scheme policy

1. This planning scheme policy is divided into four parts, being:
 - a. Part 1: Introduction;
 - b. Part 2: Information requirements;
 - c. Part 3: Standards.

1.4 Commencement

1. This planning scheme policy commences on the date of commencement of the Logan Planning Scheme 2015.

1.5 Relationship to *Planning Act 2016*

1. This planning scheme policy was made pursuant to the *Sustainable Planning Act 2009*.
2. This planning scheme policy is amended for alignment with the *Planning Act 2016*.

1.6 Applicability of this planning scheme policy

1. This planning scheme policy applies to assessable development:
 - a. on premises in:
 - i. a biodiversity area identified on Biodiversity areas overlay map OM-02.00 in Schedule 2 of the planning scheme;
 - ii. a waterway corridor and wetland area identified on Waterway corridors and wetlands overlay map OM-14.00 in Schedule 2 of the planning scheme;
 - b. where a code has a performance outcome relating to noise emission and noise immission, air, light, radiation and vibration emissions, in:
 - i. the Extractive resources overlay code;
 - ii. the Greenbank Training Area buffer overlay code;
 - iii. all zone codes.

1.7 Competency to prepare a report

1. A person undertaking an ecological assessment and preparing an ecological assessment report or an environmental offset report must have:
 - a. a relevant tertiary qualification in ecology, conservation biology, environmental planning or other appropriate disciplines;
 - b. demonstrate experience in the carrying out of survey, assessment and reporting of ecological features.
2. The name, qualification and demonstrated experience of the person undertaking the ecological assessment is to be provided in the report.

Part 2 Information requirement

2.1 Ecological assessment report

1. The purpose of this section is to set out the circumstances and level of ecological assessment to be undertaken and the requirements for the preparation and submission of an ecological assessment report.

2.1.1 Application

1. An ecological assessment is required where development is on land in:
 - a. a biodiversity area identified on Biodiversity areas overlay map OM-02.00 in Schedule 2 of the planning scheme;
 - b. a waterway corridor and wetland area identified on Waterway corridors and wetlands overlay map OM-14.00 in Schedule 2 of the planning scheme.

2.1.2 Ecological assessment report types

1. The level of detail required in the ecological assessment report is dependent on the significance of the ecological values of the subject land and the intensity of the development impact. There are two types of ecological assessment report, being:
 - a. a basic ecological assessment report;
 - b. a detailed ecological assessment report.
2. A basic ecological assessment report is required where development:
 - a. has limited capacity to adversely impact on ecological values or processes;
 - b. is proposed on land in the:
 - i. secondary vegetation management area identified on Biodiversity areas overlay map OM-02.01 in Schedule 2 of the planning scheme and outside a biodiversity corridor identified on Biodiversity areas overlay map OM-02.02 in Schedule 2 of the planning scheme; or
 - ii. minor waterway area or medium waterway area identified on Waterway corridors and wetlands overlay map OM-14.01 in Schedule 2 of the planning scheme; or
 - iii. minor wetland or a wetland buffer to a minor wetland identified on Waterway corridors and wetlands overlay map OM-14.02 in Schedule 2 of the planning scheme.
3. A detailed ecological assessment report is required where development:
 - a. has a high capacity to adversely impact on ecological values or processes;
 - b. is proposed on land in the:
 - i. environmental management and conservation area, biodiversity corridor or koala corridor identified on Biodiversity areas overlay map OM-02.02 in Schedule 2 of the planning scheme; or
 - ii. primary vegetation management area identified on Biodiversity areas overlay map OM-02.01 in Schedule 2 of the planning scheme; or
 - iii. locally significant vegetation area identified on Biodiversity areas overlay map OM-02.03 in Schedule 2 of the planning scheme being:
 - A. locally significant *Gossia gonoclada* area;
 - B. locally significant *Melaleuca irbyana* area;
 - C. locally significant Vine Forest;
 - D. locally significant remnant vegetation; or
 - iv. major waterway area or river waterway area identified on Waterway corridors and wetlands overlay map OM-14.01 in Schedule 2

- of the planning scheme; or
 - v. major wetland or a wetland buffer to a major wetland identified on Waterway corridors and wetlands overlay map OM-14.02 in Schedule 2 of the planning scheme.
4. Where there is any doubt as to the applicable level of ecological assessment report this is to be determined by the local government at the pre-emption or information request stage.

2.1.3 Basic ecological assessment report

1. A basic ecological assessment report must include:
- a. an executive summary generally following the format of the ecological assessment report;
 - b. a description of the development;
 - c. a defined study area including current aerial photography at such a scale to enable interpretation;
 - d. a description of the surrounding natural and physical environment;
 - e. a basic assessment of the ecological features of the premises, including:
 - i. a site plan, map or survey plan identifying:
 - A. all native trees;
 - B. vegetation communities;
 - C. regional ecosystems;
 - D. contour lines;
 - E. waterways and wetlands;
 - F. existing roads, buildings and infrastructure;
 - ii. a list of fauna species that are known or expected to be present on or to pass over the premises;
 - iii. the identification of the presence and location of any significant infestations of environmental weeds or pest plants;
 - iv. the identification of any adjacent conservation area or remaining bushland.
 - f. information to adequately identify, describe and assess:
 - i. the significance of the ecological values and processes on the subject land and adjoining area;
 - ii. the existing processes that threaten the ecological values of the subject land;
 - iii. the ecological links with adjacent land, at the local or regional scale depending on the scale of the development proposal;
 - iv. the potential impacts of the proposed development on identified ecological values;
 - v. the measures proposed to enhance, restore or revegetate identified ecological values;
 - vi. the measures proposed to avoid, minimise, mitigate or manage the identified impacts (including, but not limited to, consideration of the matters set out in section 1.5 - Matters to be considered in this planning scheme policy);
 - vii. the measures proposed to avoid, minimise, mitigate or manage erosion and sediment in accordance with section 3.3.7 - Erosion and sediment control of Planning scheme policy 5 - Infrastructure;
 - g. conclusions and recommendations;
 - h. a list of references, including organisations and individuals consulted during the course of the preparation of the basic ecological assessment report.

2.1.4 Detailed ecological assessment report

1. A detailed ecological assessment report must include:
- a. an executive summary generally following the format of the detailed ecological assessment report;
 - b. a description of the development, including:
 - i. the background to the study area, the context of the development and the ecological assessment and an outline of the assessment objectives;
 - ii. the justification for the development and the selection of the premises;
 - iii. a site plan, map or survey plan identifying:
 - A. all native trees;
 - B. vegetation communities;
 - C. regional ecosystems;
 - D. contour lines at one metre intervals;
 - E. waterways and wetlands;
 - F. existing roads, buildings and infrastructure;
 - c. a defined study area including current aerial photography at such a scale to enable interpretation;
 - d. details of the features of the subject land including:
 - i. a description of the topography, soils and geology of the premises;
 - ii. a description of any topographical features of significance or special value;
 - iii. a description of the soils, geology and surface drainage patterns that may influence water quality, erosion, replanting or rehabilitation and the use of waste treatment units;
 - iv. the identification of the catchment within which the premises are located;
 - v. a description of the wetlands and waterways on or adjacent to the premises, including a description of their current condition;
 - e. a detailed ecological assessment including:
 - i. a review of existing databases for flora and fauna records for the study area, such as databases held by the Queensland Herbarium, Queensland Museum and the local government;
 - ii. a flora survey that:
 - A. identifies and locates by GPS significant species;
 - B. identifies the presence and location of any significant flora species that are known or expected to be present on the premises including rare and threatened species, locally significant vegetation, native habitat trees and native trees;
 - C. describes the condition of the vegetation communities including site history, regenerating areas, edge effects, fire, prior land use, extent of canopy thinning/clearance, disturbance by weeds and feral animals, presence of understorey, native grasses, litter layer, indications of dieback and potential causes, and other relevant notes detailing the methodology utilised for flora identification and mapping;
 - iii. a fauna survey that:
 - A. identifies fauna species using and potentially utilising the subject land;
 - B. identifies the presence and location of terrestrial and aquatic fauna species that are known or expected to be present on the premises permanently or periodically throughout any given season or year including rare and threatened species, regionally and locally significant species;
 - C. provides a detailed list of fauna species that distinguishes between observed fauna and fauna likely to occur on the premises;
 - D. identifies and locates by GPS significant or critical habitat features including but not limited to:
 - 1. trees supporting scratch marks and hollows;
 - 2. roost, nest and den trees;

3. location and identification of scratch marks, scats and other traces;
4. fauna trails;
5. nests in banks;
6. ground diggings;
7. fallen logs, termite mounds and rock outcrops;
8. fallen fruit and seed;
9. sightings, traps, baiting and other fauna monitoring locations and techniques;
- f. the identification, location and connectivity to any conservation areas such as parks, reserves and habitat areas;
- g. a detailed assessment of ecological values including:
 - i. core habitat areas;
 - ii. habitat or refuge for endangered, vulnerable and rare species or locally significant species;
 - iii. prevention of soil erosion and/or land degradation;
 - iv. ecological/biodiversity corridors (continuous or fragmented);
 - v. buffer areas (if the study area adjoins an area of ecological and conservation importance such as a waterbody, watercourse, wetland, endangered or regional ecosystem);
 - vi. isolated remnants;
 - vii. stepping stone habitat;
 - viii. protection of water quality;
 - ix. localised contribution to biodiversity (an area may be of local importance for biodiversity, incorporating refugia qualities, artificial waterbodies or managed wetlands of ecological significance, or hollow bearing trees providing habitat for arboreal mammals and nesting birds);
 - x. other functions of significance;
- h. an assessment of the potential environmental effects of the development including a quantification where possible of the following types of impacts:
 - i. direct and indirect;
 - ii. short and long term;
 - iii. temporary and irreversible;
 - iv. adverse and beneficial;
 - v. singular and cumulative;
- i. a description of the extent and effects of disturbance and clearing of plants on the premises as a result of the development, including:
 - i. a plan of the areas of clearing and disturbance;
 - ii. a description of the extent and effects of earthworks including drip zones and cut and fill;
 - iii. erosion and sediment control measures to comply with section 3.3.7 - Erosion and sediment control of Planning scheme policy 5 - Infrastructure;
- j. a summary of the potential environmental effects;
- k. a fauna management plan to ensure that appropriate environmental controls and procedures are implemented during construction activities, to avoid or minimise potential adverse impacts to fauna within the development footprint, including:
 - i. mitigation measures required to be taken to minimise fauna and habitat effects during operational and post-operational works;
 - ii. specific fauna management procedures for potential or known habitat trees;
 - iii. spotter/catcher works plan including measures to be taken for fauna requiring care or euthanasia, temporary fauna storage and housing, and release/disposal measures;
 - iv. recommendations for mitigating, ameliorative or compensatory measures to ensure expected impacts are avoided, minimised or managed appropriately, including the provision of adequate buffers;
- l. a detailed statement of the methods proposed to reduce all potential environmental effects, including changes to the design of the development where possible (including, but not limited to consideration of the matters set out in section 2.1.5 - Matters to be considered in this planning scheme policy);
- m. where an adverse impact on the environment cannot be minimised, a discussion of the reasons the adverse impact cannot be minimised and any associated consequence and details of any proposed compensatory measures;
- n. details of any proposed rehabilitation area;
- o. the identification of any requirement for an environmental management plan to be prepared for the purposes of protecting the ecologically significant areas during the construction and operational phases of the development;
- p. a list of references, including organisations and individuals consulted during the course of the preparation of the detailed ecological assessment report.

2.1.5 Matters to be considered

2.1.5.1 Tree protection zone

1. Prior to any native vegetation being removed, the extent of the area must be clearly demarcated on the ground to avoid confusion amongst site personnel and to ensure additional vegetation is not removed or damaged unnecessarily.
2. The establishment of a tree protection zone in accordance with AS 4970-2009 Protection of trees on development sites is therefore advisable. The tree protection zone is a combination of the root area and crown area requiring protection, to be isolated from construction disturbance so that the tree remains viable.

2.1.5.2 Clearing pattern/fauna flushing

1. Clearing within each individual area is to occur in accordance with the requirements and sequencing listed on a clearing plan, ensuring native animals are flushed towards the safe haven of larger retained areas of remnant bushland and away from adjoining roads and areas of existing development.
2. A clearing plan is to be undertaken using the following principles:
 - a. clearing occurs once a spotter/catcher gives sign off that the site is clear of native fauna identified as present on the site;
 - b. clearing commences in areas of least connectivity and directs fauna towards retained areas;
 - c. clearing is sequenced to ensure adequate time for fauna to relocate towards retained areas.

2.1.5.3 Machinery and plant use

1. By utilising the most appropriate machinery and equipment during vegetation clearing, the probability of injury or death of wildlife during clearing can be significantly reduced or eliminated while still maintaining an efficient vegetation removal process.
2. Suggested techniques are as follows:
 - a. a vertical tree grab attachment on an excavator (30 tonne) can be used to pull entire trees in size up to 30-40cm diameter at a height measured at 1.3 metres above ground level and lay them down in a steady controlled fashion, allowing inspection by a wildlife spotter-catcher;

- b. where large trees are too large for a vertical tree grab and have been identified, an elevated work platform or cherry picker should be used in conjunction with a chainsaw operator and wildlife spotter/catcher;
- c. the use of bulldozers to clear vegetation is limited to low or regrowth vegetation that has been thoroughly inspected by a wildlife spotter/catcher and is found to contain no fauna or potential habitat. Bulldozers are not to be used to push over large trees that contain hollows or other habitat features.

2.1.5.4 Clearing and disposal

1. Cleared vegetation is to be reused on or off premises. Recycling techniques include mulching, tub-grinding, wood chipping and salvage (e.g. custom milling). Trees with identified hollows should have the hollow section preserved and this section should be suitably mounted on nearby or adjacent suitable trees.

2.2 Environmental offset report

1. The purpose of this section is to set out the requirements for information to be contained in an environmental offset report.

2.2.1 Application

1. A development application for operational work for vegetation clearing must be accompanied by an environmental offset report.
2. Where a specific information request is made by the local government seeking more detailed information than that contained in this policy, the requirement for more detailed information takes precedence.

2.2.2 Environmental offset report types

1. There are two types of environmental offset reports, being:
 - a. a restoration offset report, required when a restoration offset is required in accordance with 3.1.4 - Restoration offsets in this planning scheme policy; and
 - b. an external offset report, required when an external offset is required in accordance with 3.1.5 - External offsets in this planning scheme policy.

2.2.3 Restoration offset report

1. A restoration offset report must include the following information:
 - a. a description of the proposed development including:
 - i. the number and species of each native tree to be cleared;
 - ii. the number and species of each native habitat tree to be cleared;
 - iii. the number of species of each native tree proposed to be planted as an offset;
 - iv. the number of square metres of native vegetation in the primary vegetation management area to be cleared;
 - v. the area of the primary vegetation management area to be planted as an offset or rehabilitated;
 - b. a site plan, map or survey plan of the premises identifying:
 - i. the location of each native tree to be cleared;
 - ii. the location of each native habitat tree to be cleared;
 - iii. the location of each native tree to be planted as an offset;
 - iv. the location of the area of primary vegetation management area to be cleared;
 - v. the area of the primary vegetation management area to be planted as an offset or rehabilitated;
 - c. a clearing plan describing the sequence in which clearing is to occur, as detailed in section 2.1.5.2 - Clearing pattern/fauna flushing in this planning scheme policy;
 - d. a description of erosion and sediment control measures to comply with section 3.3.7 - Erosion and sediment control of Planning scheme policy 5 - Infrastructure.

2.2.4 External offset report

1. An external offset report must include the following information:
 - a. a description of the proposed development including:
 - i. the number and species of native trees to be cleared;
 - ii. the number and species of native habitat trees to be cleared;
 - iii. the area in square metres of primary vegetation management area to be cleared;
 - b. the calculation for the external offset provided by the local government, using the methodology identified in:
 - i. section 3.1.9.3 - Calculation for a financial settlement offset based on matters of local environmental significance (MLES) and calculated according to Appendix 6 - Financial settlement offset calculation methodology of the Queensland Environmental Offsets Policy; or
 - ii. section 1.9.5 - Calculation for a financial settlement offset based on the ecological index of the land being impacted by development; or
 - iii. section 3.1.9.5 - Calculation for a proponent driven offset;
 - c. a site plan, map or survey plan of the subject land identifying:
 - i. the location of each native tree or native habitat tree to be cleared;
 - ii. the location of the area of primary vegetation management area to be cleared;
 - d. a clearing plan describing the sequence in which clearing is to occur, as detailed in section 2.1.5.2 - Clearing pattern/fauna flushing in this planning scheme policy;
 - e. a description of erosion and sediment control measures to comply with section 3.3.7 - Erosion and sediment control of Planning scheme policy 5 - Infrastructure;
 - f. a draft infrastructure agreement between the local government and the proponent for a proposed development that outlines the obligations of the proponent.

Note - Section 2.2.4(1)(b) of this planning scheme policy reflects the *Environmental Offsets Act 2014*, section 23(2)(a), which provides that the amount of the payment for a financial settlement offset (if the administering agency is a local government) can be an amount *up to the amount* determined by the local government in accordance with the environmental offsets policy. The Explanatory Notes explain that this section was inserted into the *Environmental Offsets Act 2014* to give greater flexibility for local government in approving financial settlement payments where the actual costs of delivering the offset are less than the calculator in the Queensland Environmental Offsets Policy.

Part 3 Standards

3.1 Environmental offset standards

3.1.1 Environmental offset principles

1. To achieve the purpose and overall outcomes of the Biodiversity areas overlay code, development should:
 - a. protect the current extent of native vegetation in the primary vegetation management area and protect the current extent of native trees and native habitat trees in the secondary vegetation management area; or
 - b. achieve a net gain in biodiversity and ecosystem values through offsetting unavoidable clearing.
2. The following principles apply to offsets:
 - a. environmental impact is first to be avoided, then minimised, before considering the use of offsets for any remaining impact;
 - b. environmental offset does not replace or undermine existing standards or regulatory requirements, or be used to allow development in areas otherwise prohibited through legislation or policy;
 - c. an environmental offset achieves an equivalent or better environmental outcome;
 - d. offsets should be provided:
 - i. on the same lot from which the vegetation is cleared; or
 - ii. within the local government area, bordering a conservation park, in strategically important locations such as Environmental management and conservation areas, or Biodiversity corridors and Koala corridors identified in Biodiversity areas overlay map OM-02.02 in Schedule 2 of the planning scheme.
 - e. offset provisions should minimise the time lag between the impact and delivery of the offset;
 - f. offset sites must become secure conservation land.

Note - An offset agreement made under the Queensland Environmental Offsets Policy for a Matter of State Ecological Significance which is also a Matter of Local Ecological Significance will be recognised by the local government as an offset for the purposes of the approval of vegetation clearing and this policy will not apply.

Note - Development that is a material change of use for a dwelling house, dual occupancy, or dual occupancy (auxiliary unit) is not required to provide an environmental offset where no more than 4,000 m² of native vegetation in the primary vegetation management area and native trees and native habitat trees in the secondary vegetation management area is cleared for a Development envelope area. This exemption does not extend to development that is a reconfiguration of a lot.

3.1.2 Environmental offset delivery options

1. An environmental offset is provided:
 - a. pursuant to a condition of a development approval given by the local government; or
 - b. pursuant to an infrastructure agreement.

3.1.3 Types of environmental offset

1. There are two types of environmental offsets, being:
 - a. a restoration offset on the same lot from which the vegetation is cleared; or
 - b. an external offset consisting of:
 - i. a financial settlement offset; or
 - ii. a proponent driven offset.

3.1.4 Restoration offsets

1. Restoration offsets are small-scale offsets which apply where:
 - a. the unavoidable impacts of development are offset to another area on the same lot;
 - b. the restoration offset will provide a gain in biodiversity and ecosystem values, such as rehabilitating degraded areas, wildlife habitats, connectivity and corridor values;
 - c. an offset site on the same lot is large enough to accommodate the offset required.
2. The restoration offset is calculated by the local government using the methodology specified in section 3.1.9.2 - Calculation for a restoration offset in this planning scheme policy.
3. Restoration offsets are to be maintained until the native tree or native vegetation is self-sustaining.

3.1.5 Offset being an external offset

1. Where an environmental offset cannot be achieved through a restoration offset, an environmental offset can still be achieved through an external offset.
2. An environmental offset being an external offset applies where:
 - a. the unavoidable impacts of development are unable to be offset on the same lot; or
 - b. the offset area on the same premises will not provide an environmental gain such as the rehabilitation of degraded areas, wildlife habitat, connectivity or corridor values; or
 - c. an infrastructure agreement is entered into under the *Planning Act 2016* between the local government and the proponent for the proposed development.
3. An environmental offset being an external offset consists of:
 - a. a financial settlement offset by the proponent to be used by the local government to purchase, revegetate and maintain environmental offset land; or
 - b. a proponent driven offset being the transfer of the environmental offset land to the local government, as part of an infrastructure agreement, subject to the following suitability requirements:
 - i. the offset enhances and contributes to Environmental management and conservation areas, Biodiversity corridors and Koala corridors as identified on Biodiversity areas overlay map OM-02.02 in Schedule 2 of the planning scheme;
 - ii. the land:
 - A. contains no native trees; or
 - B. has a density of less than one native tree per 10m²;
 - iii. remnant vegetation on the land is not counted towards an offset;
 - iv. a proponent driven offset must include a five-year management period of the site and must achieve the following objectives and outcomes of revegetation in order for the local government to accept it as an offset:
 - A. plant survival of at least 80%;
 - B. native tree (canopy and mid-storey species) density $\geq$ one tree per 10m²;
 - C. evidence of natural regeneration on site;
 - D. no class 1 or 2 weeds present on site, and less than 5 percent weed cover across the site for other weed species;

- E. species diversity generally representative of regional ecosystem of the site.
4. A financial settlement offset is calculated by the local government using the methodology specified in:
 - a. section 3.1.9.3 - Calculation for a financial settlement offset based on matters of local environmental significance (MLES) and calculated according to Appendix 6 - Financial settlement offset calculation methodology of the Queensland Environmental Offsets Policy; or
 - b. section 3.1.9.5 - Calculation for a financial settlement offset based on the ecological index of the land, only where the financial settlement offset amount is lesser than the financial settlement offset amount calculated using the methodology specified in section 3.1.5 (4) (a).
 5. A proponent driven offset is calculated by the local government using the methodology specified in section 3.1.9.5 - Calculation for a financial settlement offset based on the ecological index of the land.
 6. The proponent for a proponent driven offset is responsible for all:
 - a. administrative costs including but not limited to costs associated with reconfiguration, surveying, transfer of ownership to the local government and protection of the offset site;
 - b. rehabilitation costs that include, but are not limited to, revegetation, weed and pest management and monitoring for a period of five years.
 7. A financial settlement offset must be paid to the local government prior to the commencement of any operational works.

3.1.6 Securing a land contribution as an offset site

1. A proponent driven offset, required as a condition of the development approval is to be transferred to the local government as freehold at the end of the five year management period.

3.1.7 Linkages with carbon offsets/sinks

1. Where an offset is provided as a condition of a development approval, the offset site is not a formal carbon offset/sink.
Editor's note - The Australian Government's National Carbon Offset Standard contains further information about the application of a carbon offset/sink.

3.1.8 Register of offset sites

1. The local government will maintain a register of environmental offsets to:
 - a. record income from financial contributions and expenses of acquiring and rehabilitating offset land;
 - b. maintain a database of locations of:
 - i. restoration offsets;
 - ii. financial settlement offsets; and
 - iii. Proponent driven offsets.

3.1.9 Calculation of offsets

1. A certificate outlining offset requirements must be obtained from the local government. This certificate will detail the area to be cleared, the ecological index of the area to be cleared and the ecological index of the area to be offset.

3.1.9.1 Principles of calculating an offset

1. Offsets are calculated:
 - a. in the primary vegetation management area, on a per square metre basis of native vegetation cleared;
 - b. in the secondary vegetation management area:
 - i. as the number of native trees and native habitat trees cleared; or
 - ii. on a per square metre basis where the number of trees are at a density of one native tree per 10m² or greater.

Note - where a native tree is not offset as a restoration offset, a financial settlement offset will be charged at the rate of 10m² of offset land per tree.

Note - where a native habitat tree is not offset as a restoration offset, a financial settlement offset will be charged at the rate of 20m² of offset land per native habitat tree.

3.1.9.2 Calculation for a restoration offset

1. Restoration offsets will be calculated as follows:
 - a. two square metres of native vegetation is revegetated for every square metre cleared in a primary vegetation management area;
 - b. an additional twenty square metres of native vegetation is revegetated for every native habitat tree removed in a primary vegetation management area;
 - c. two trees of the same species are to be replanted for every native tree cleared in a secondary vegetation management area;
 - d. four trees of the same species are to be replanted for every native habitat tree removed in a secondary vegetation management area.
2. Notwithstanding section 3.1.9.2, the total land area for the restoration offset does not exceed the impact site area by more than a factor of four.

3.1.9.3 Calculation for a financial settlement offset based on matters of local environmental significance (MLES) and calculated according to Appendix 6 - Financial settlement offset calculation methodology of the Queensland Environmental Offsets Policy

1. A financial settlement offset is calculated as follows:
 - a. Calculation of the financial settlement offset

$$FS = OC + LIP + AC$$

Note - The equation is calculated as follows:

- i. FS is the offset costs for a financial settlement offset payable to local government for the unavoidable impacts of a development;
- ii. OC is the on-ground cost determined by the size of the offset site multiplied by the on-ground cost for the Moreton Basin subregion as shown in section 6.5.4 of Appendix 6 of the Queensland Environmental Offsets Policy;
- iii. LIP is the landholder incentive payment which is a component of the financial settlement offset payable to local government as the landholder of offset land to cover the costs of acquiring, rehabilitating and managing offset land. It is determined by the size of the offset site multiplied by the statutory land value for Logan City Council as shown in section 6.5.3 of Appendix 6 of the Queensland Environmental Offsets Policy; and
- iv. AC is the administrative cost and is the estimated cost to the local government to maintain and administer offset land.

- b. Calculation of the on-ground costs

$$OC = SO \times \text{on-ground costs per ha}$$

Note - The equation is calculated as follows:

- i. OC is the on-ground cost determined by the size of the offset site multiplied by the on-ground cost for the Moreton Basin subregion as shown in section 6.5.4 of Appendix 6 of the Queensland Environmental Offsets Policy; and
- ii. SO is the size of the offset site a proponent has to provide for the unavoidable impacts of development and is determined by the sum of the four MLES's and their multipliers as determined in 3.1.9.3 (1) (e).

c. Calculation of the landholder incentive payment

$$\text{LIP} = \text{SO} \times \text{statutory land value per ha}$$

Note - The equation is calculated as follows:

- i. LIP is the landholder incentive payment which is a component of the financial settlement offset payable to local government as the landholder of offset land to cover the costs of acquiring, rehabilitating and managing offset land. It is determined by the size of the offset site multiplied by the statutory land value for Logan City Council as shown in section 6.5.3 of Appendix 6 of the Queensland Environmental Offsets Policy; and
- ii. SO is the size of the offset site a proponent has to provide for the unavoidable impacts of development and is determined by the sum of the four MLES's and their multipliers as determined in 3.1.9.3 (1) (e).

d. Calculation of the administrative costs

$$\text{AC} = \text{OC} \times 25\%$$

Note - The equation is calculated as follows:

- i. AC is the administrative cost and is the estimated cost to the local government to maintain and administer the offset; and
- ii. OC is the on-ground cost determined by the size of the offset site multiplied by the on-ground cost for the Moreton Basin subregion as shown in section 6.5.4 of Appendix 6 of the Queensland Environmental Offsets Policy.

e. Calculation of the size of the offset site

$$\text{SO} = (\text{Area of MLES 1} \times \text{M}) + (\text{Area of MLES 2} \times \text{M}) + (\text{Area of MLES 3} \times \text{M}) + (\text{Area of MLES 4} \times \text{M})$$

Note - The equation is calculated as follows:

- i. SO is the size of the offset site a proponent has to provide for the unavoidable impacts of development.
- ii. MLES is the matter of local environmental significance identified in Biodiversity areas overlay map OM-02.04 and determined by the ecological index of land in Figure 3.1.10.1 - Ecological significance as follows:
 - A. MLES 1: land with an environmental index of 1 to 12;
 - B. MLES 2: land with an environmental index of 13 to 22;
 - C. MLES 3: land with an environmental index of 23-32;
 - D. MLES 4: land with an environmental index of 33 to 62.
- iii. M is the multiplier used to calculate the size of the offset site and is determined by the MLES impacted by development as follows:
 - A. MLES 1 will have a multiplier of 1
 - B. MLES 2 will have a multiplier of 2
 - C. MLES 3 will have a multiplier of 3
 - D. MLES 4 will have a multiplier of 4

3.1.9.4 Calculation for a financial settlement offset based on the ecological index of the land being impacted by development

1. A financial settlement offset is calculated as follows:

$$\text{FS} = (\text{AC} + \text{RC} + \text{LC}) \times \text{SO}$$

Note - The equation is calculated as follows:

- a. FS is the financial settlement offset;
 - b. AC is the administrative cost (dollars per hectare) that is the cost associated with acquisition and protection of the offset;
 - c. RC is the rehabilitation cost (dollars per hectare) that includes revegetation, weed and pest management and monitoring (dollars per hectare) times CPI;
 - d. LC is the land cost that is the amount proponent has to pay to purchase one hectare of offset site from the local government's offset land. This is determined by the price the local government paid for the land plus the median sale price of properties in the same suburb; and
 - e. SO is the size of offset land (in hectares) that is required to be offset.
2. The size of the offset site required in the secondary vegetation management area is determined either:
- a. by the number of native trees and native habitat trees cleared, where:
 - i. a native tree is offset at the rate of 10m² per tree;
 - ii. a native habitat tree is offset at the rate of 20m² per tree; or
 - b. on a per square metre basis as calculated for primary vegetation management area in section 3.1.9.4 (3) of this planning scheme policy.
3. The size of the offset site required in the primary vegetation management area is determined by the size of the clearing site and the ecological indexes of the offset site and clearing site as follows:

$$\text{SO} = \frac{\text{SC} \times \text{EIC}}{\text{EIS}}$$

Note - The equation is calculated as follows:

- a. SO is the size of the offset site in hectares;
- b. EIS is the ecological index of the offset site calculated as in section 3.1.10 - Ecological index of this planning scheme policy;
- c. SC is the size of the clearing site in hectares;
- d. EIC is the ecological index of the clearing site calculated as in section 3.1.10 - Ecological index of this planning scheme policy.

3.1.9.5 Calculation for a proponent driven offset

1. Where the proponent provides a proponent driven offset rather than a financial settlement offset, the proponent is responsible for:

- a. all the administrative costs associated with reconfiguration, surveying, transfer of ownership to the local government and protection of the offset land;
- b. all rehabilitation costs including revegetation, weed and pest management and monitoring for a period of five years;
- c. providing suitable offset land which in size is equal to the greater of:
 - i. the size of the clearing site; or
 - ii. an offset site calculated on a per square metre basis as in:
 - A. section 3.1.9.3 (1) (e) based on MLES ; or
 - B. section 3.1.9.4 (3) based on the ecological index of land.

3.1.10 Ecological index

1. The ecological index of a premises, clearing site or offset site is the sum of its ecological values expressed per unit area (hectare). The local government will calculate the ecological index and provide an ecological index certificate. The ecological index determined by the local government for a site may be amended by the local government following detailed investigations carried out by an appropriately qualified ecologist.

Note - A request to amend an ecological index based on the investigations of an appropriately qualified ecologist is to be made to the local government and determined prior to a development application being lodged with the local government. If a request to amend an ecological index is made to the local government after a development application has been lodged with the local government, the ecological index will be calculated based solely on the ecological values of the clearing site or offset site as identified in Figure 3.1.10.1 - Ecological significance in this planning scheme policy.

3.1.10.1 Calculating the ecological index

Calculation of the ecological index of clearing sites or offset sites relies on the ecological values of the land as determined by Figure 3.1.10.1 - Ecological significance

1. in this planning scheme policy. This figure identifies spatially mapped areas of land called polygons containing similar ecological values.
2. The ecological index of a clearing site or offset site is calculated as follows

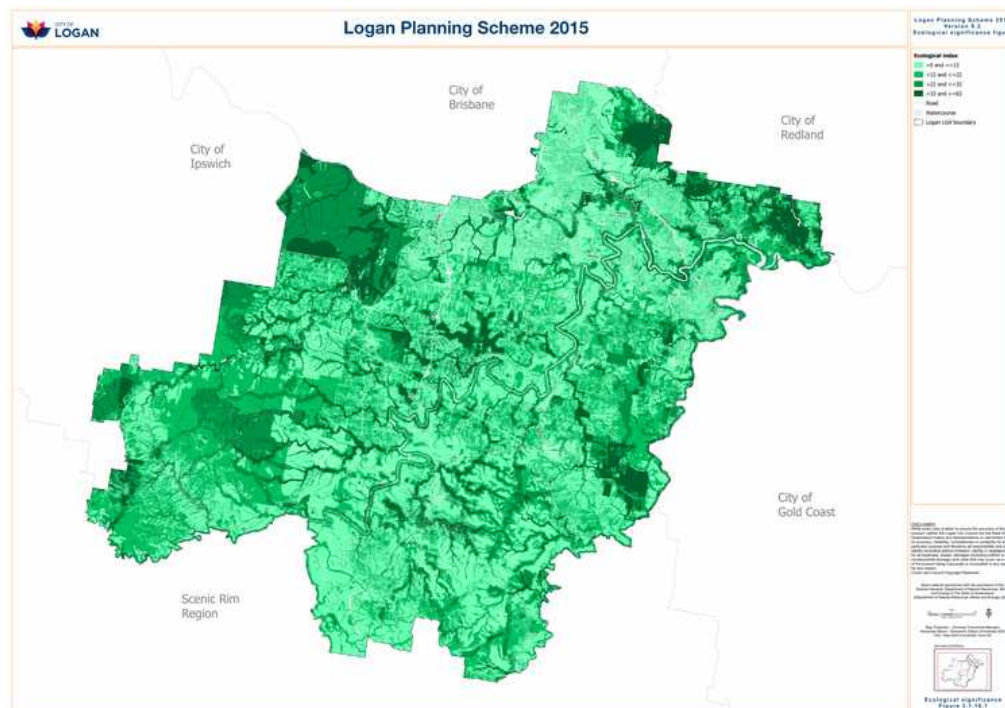
$$EI = \frac{(S \times V)P_1}{S_T} + \frac{(S \times V)P_2}{S_T} + \dots + \frac{(S \times V)P_n}{S_T}$$

Note - The equation is calculated as follows:

- a. EI is the ecological index of the clearing site or offset site;
- b. S is the size of the polygons P1 to Pn within the clearing site or offset site;
- c. V is the ecological values of the polygons P1 to Pn within the clearing site or offset site as identified in Figure 3.1.10.1 - Ecological significance
- d. in this planning scheme policy;
- e. S_T is the total size in hectares of the clearing site or offset site.

Note - Section 3.1.9.1 of this planning scheme policy reflects the *Environmental Offsets Act 2014*, section 23(2)(a), which provides that the amount of the payment for a financial settlement offset (if the administering agency is a local government) can be an amount up to the amount determined by the local government in accordance with the environmental offsets policy. The Explanatory Notes explain that this section was inserted into the *Environmental Offsets Act 2014* to give greater flexibility for local government in approving financial settlement payments where the actual costs of delivering the offset are less than the calculator in the Queensland Environmental Offsets Policy.

Figure 3.1.10.1 - Ecological significance



3.2 Emission and immission standards

3.2.1 Noise emission and noise immission standards

1. The noise emission standards are specified in:
 - a. Table 3.2.1.1 - Noise emission standards for the protection of residential amenity in this planning scheme policy for the:
 - i. Community facilities zone;
 - ii. Emerging community zone;
 - iii. Environmental management and conservation zone;
 - iv. Low density residential zone;
 - v. Low-medium density residential zone;
 - vi. Medium density residential zone;
 - vii. Private sport and recreation precinct of the Recreation and open space zone;
 - viii. Rural residential zone other than the Cottage rural precinct;
 - b. Table 3.2.1.2 - Noise emission standards for the protection of general amenity in this planning scheme policy for the:
 - i. Centre zone;
 - ii. Low impact industry zone;
 - iii. Medium impact industry zone;
 - iv. Mixed use zone;
 - v. Specialised centre zone.

Table 3.2.1.1 - Noise emission standards for the protection of residential amenity

Noise level at the boundary of premises			
Noise type	Time period	Monday to Saturday	Sunday and public holidays
Non-steady sound*	Day 7:00am - 6:00pm	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$
	Evening 6:00pm to 10:00pm	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$
	Night 10:00 - 7:00am	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 0 \text{ dB(A)}$ and $L_{Amax} \leq 60 \text{ dB(A)}$	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 0 \text{ dB(A)}$ and $L_{Amax} \leq 60 \text{ dB(A)}$
Continuous noise*	Anytime	$L_{A90,T} \text{ plus } 0 \text{ dB(A)}$	$L_{A90,T} \text{ plus } 0 \text{ dB(A)}$

Editor's note - * as defined in AS1055.1-1997 Acoustics - Description and measurement of environmental noise

Note - Adjustments for tonality and impulsiveness to be included in accordance with AS1055.1-1997 Acoustics - Description and measurement of environmental noise.

Table 3.2.1.2 - Noise emission standards for the protection of general amenity

Noise level at the boundary of premises			
Noise type	Time period	Monday to Saturday	Sunday and public holidays
Non-steady sound *	Day 7:00am - 6:00pm	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 10 \text{ dB(A)}$	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$
	Evening 6:00pm to 10:00pm	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 10 \text{ dB(A)}$	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$
	Night 10:00pm - 7:00am	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$ and $L_{Amax} \leq 80 \text{ dB(A)}$	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$ and $L_{Amax} \leq 80 \text{ dB(A)}$
Continuous noise*	Anytime	$L_{A90,T} \text{ plus } 5 \text{ dB(A)}$	$L_{A90,T} \text{ plus } 5 \text{ dB(A)}$

Note - Adjustments for tonality and impulsiveness to be included in accordance with AS1055.1-1997 Acoustics - Description and measurement of environmental noise.

2. The noise immission standards are identified in Table 3.2.1.3 - Noise immission standards in this planning scheme policy.

Table 3.2.1.3 - Noise immission standards

Noise level measured at a sensitive land use
Indoor acoustic quality objectives* as outlined in Schedule 1 of the <i>Environmental Protection (Noise) Policy 2008</i>

Editor's note - * as defined by Schedule 2 of the *Environmental Protection (Noise) Policy 2008*

Note - Adjustments for tonality and impulsiveness to be included in accordance with AS1055.1-1997 Acoustics - Description and measurement of environmental noise.

3. The following Australian Standards and codes of practice apply to noise immissions, emissions and to the preparation of acoustic reports:
 - a. 1-1997 Acoustics - Description and measurement of environmental noise - General procedures;
 - b. 2-1997 Acoustics - Description and measurement of environmental noise - Application to specific situations;
 - c. 3-1997 Acoustics - Description and measurement of environmental noise - Acquisition of data pertinent to land use;
 - d. 1-1990 Acoustics - Measurement of airborne noise emitted by rotating electrical machinery - Engineering method for free-field conditions over a reflective plane;
 - e. 2-1990 Acoustics - Measurement of airborne noise emitted by rotating electrical machinery - Survey method;
 - f. 1-1990 Acoustics - Measurement of airborne noise emitted by earth-moving machinery and agricultural tractors - Stationary test condition - Determination of compliance with limits for exterior noise;
 - g. 2-1990 Acoustics - Measurement of airborne noise emitted by earth-moving machinery and agricultural tractors - Stationary test condition - Operator's position;
 - h. AS2363-1999 Acoustics - Measurement of noise from helicopter operations;
 - i. AS2377-2002 Acoustics - Methods for the measurement of railbound vehicle noise;
 - j. AS2702-1984 Acoustics - Methods for the measurement of road traffic noise;
 - k. AS4959-2010 Acoustics - Measurement, prediction and assessment of noise from wind turbine generators;
 - l. 4 Buildings in transport noise corridors, Queensland Development code;
 - m. Code of Practice: Railway Noise Management (2007). Version 2, Queensland Rail;
 - n. Road Traffic Noise Management: Code of Practice (2008). Department of Transport and Main Roads;
 - o. Noise Measurement Manual (2013). Department of Environment and Heritage Protection.

3.2.2 Air emission standards

1. Table 3.2.2.1 - Air emission standards in this planning scheme policy identifies the air emission standards.

Table 3.2.2.1 - Air emission standards

Column 1 Air emission indicator	Column 2 Design ground level concentrations at and beyond the premises boundary		Column 3 Averaging time
	ppm (except as otherwise indicated)	mg/m3 (except as otherwise indicated)	
Nitrogen dioxide	0.1	0.19	1 hour
Particles (deposited) ^c	4g/m2/month ^{b*}	2.g/m2/month ^{a*}	30 days
Particles (as TSP) (Nuisance dust)	- -	0.09 * 0.33	1 year 3 minutes
Particles (as PM10) ¹	- -	0.05 * 0.080	24 hours 1 hour
Particles (as PM2.5)	- -	0.050 0.025 #	1 hour 24 hours
Carbon monoxide	25 9 #	29 -	1 hour 8 hours
Photochemical oxidants (as ozone)	0.1 0.08 #	0.214 * -	1 hour 24 hours
Sulphur dioxide	0.17 0.08 #	0.45 -	1 hour 24 hours
Lead	- -	0.0005 * 0.003	Annual 1 hour
Hydrogen sulphide	0.0001	0.00014	3 minutes
1,2 dichloroethane	6.7 0.018	26.3 0.07 *	3 minutes 1 hour
Dichloromethane	0.9 1.7	3.19 * 5.8	1 hour 3 minutes
Formaldehyde	0.018 0.033 0.04 #	0.02 * 0.04 -	1 hour 3 minutes 24 hours
TDI toluene- 2,4-diiso-cyanate	-	0.00007 0.00004 *	3 minutes 1 hour
MDI diphenylmethane diiso-cyanate	-	0.00007 0.00004 *	3 minutes 1 hour
Vinyl chloride	0.017	0.043	3 minutes
Tetrachloroethylene	0.94	6.3	3 minutes
Trichloroethylene	0.09 0.17	0.5 * 0.9	1hour 3 minutes
Styrene (Monomer)	0.05	0.21	3 minutes
Toluene	0.17 1 #	0.65 -	3 minutes 24 hours
Benzene	0.017	0.053	3 minutes
Fluoride ²	0.00059 0.002 0.0034	0.0005 0.0017 0.0029	90 days 7days 24 hours
Chloromethane	1.7	3.4	3 minutes
Chloroethane	33.3	86.6	3 minutes
Chloroform	0.33	1.6	3 minutes
1,1,1-Trichloroethane	4.2	22.7	3 minutes
1,1,2-Trichloroethane	0.33	1.8	3 minutes
Carbon tetrachloride	0.0033	0.021	3 minutes
Chlorobenzene	0.042	0.20	3 minutes
Ethylbenzene	3.3	14.5	3 minutes
Xylenes	0.08 0.25#	0.35 -	3 minutes 24 hours
Dioxins and Furans (as TCDD I-TEQs)	-	0.0000000037	3 minutes
Arsenic and compounds	-	0.00017	3 minutes

Cadmium and chromium compounds	-	0.000033	3 minutes
Chromium VI compounds	-	0.00017	3 minutes
Mercury organic	-	0.00033	3 minutes
Mercury inorganic	-	0.0033	3 minutes
Nickel and compounds	0.00017	0.00033	3 minutes
	Design concentration at the premises boundary	Design concentration at the premises boundary to an air emission sensitive land use	
General odour emission	10 OU ^a	1 OU	3 minutes
		Criteria for an air emission sensitive use locating in proximity to an existing use that is likely to emit odour	
Reverse amenity		2.5 OU	1-hour average, 99.5th percentile

Note - Criteria are generally sourced from the Victorian Government Gazette S240 21 Dec 2001 unless otherwise indicated.

Note - ^a Sourced from Approved Methods for Modelling and Assessment of Air Pollutants in New South Wales.

Note - ^b Sourced from Logan Planning Scheme 2006 and *Guideline: Odour Impact Assessment from Developments (DEHP)*.

Note - ^c Sourced from Schedule 1 Environmental Protection (Air) Policy 2008.

Note - Odour units to be determined using Australian Standard Method DR99306 Air Quality - determination of odour concentration by dynamic olfactometry.

Note - ^a maximum increase in deposited dust levels

Note - ^b Maximum total deposited dust level

Note - ^c Deposited particles are assessed as insoluble solids as defined by AS/NZS 3580.10.1:2003

Note - ¹Applies to point sources only

Note - ²fluoride content is calculated by dry weight and expressed as fluoride (F-)ppm

3.2.3 Light emission standards

- Table 3.2.3.1 - Light emission standards and Table 3.2.3.2 - Maximum luminous intensity per luminaire for 6pm - 11pm period in this planning scheme policy identifies the light emission standards.

Table 3.2.3.1 - Light emission standards

Column 1 Light technical parameter	Column 2 Time	Column 3 Application or calculation conditions	Column 4 Maximum values at affected premises		
			Accommodation activity in or adjoining the Centre zone	Residential zones	
				Light surrounds	Dark surrounds
Illuminance in vertical plane (E _v)	6am - 11pm	Limits apply at the boundary of the residential premises, in a vertical plane parallel to the relevant boundary, to a height commensurate with the height of the affected dwelling unit. Values given are for the direct component of illuminance.	25 lx	10 lx	10 lx
	11pm - 6am	Limits apply in the plane of the windows of the habitable rooms of a dwelling unit. In the absence of development (that is a vacant lot), the limits apply on the potentially affected premises, in a vertical plane parallel to the relevant boundary, at the minimum boundary clearance permitted for the residential use, to a height commensurate with the applicable code for the development. Values given are for the direct component of illuminance.	4 lx	2 lx	1 lx
Luminous intensity emitted by luminaires (I)	6am - 11pm	Limits apply to each luminaire (irrespective of the number on a head frame) in the principal plane, for all angles at and above the control direction, when aimed in accordance with the installation design.	Limits as determined from Table 3.2.3.2 - Maximum luminous intensity per luminaire for 6pm - 11pm period in this planning scheme policy.		
	11pm - 6am	Limits apply in directions where views of bright	2,500 cd	1,000 cd	500 cd

		surfaces of luminaires are likely to be troublesome to residents, from positions where such views are likely to be maintained, that is not where momentary or short-term viewing is involved.			
Threshold increment (TI)	N/A	Limits apply at all times where motorists or cyclists are subject to a reduction in the ability to see essential information. Values given are for relevant positions and viewing directions in the path of travel.	20% based on adaptation luminance (L) of 10 cd/m ²	20% based on adaptation luminance (L) of 10 cd/m ²	20% based on adaptation luminance (L) of 10 cd/m ²

Note - Application or calculation conditions - See figure 2.1 and section 5 of AS 4282:1997: Control of the obtrusive effects of outdoor lighting.

Note - Light surrounds - where the affected premises adjoins a road that is lit to Category V5 or higher in accordance with AS/NZS 1158.1.1:2005: Lighting for roads and public spaces - Vehicular traffic (Category V) lighting - Performance and design requirements.

Note - Dark surrounds - where the affected premises adjoins a road that is lit to Category P3 or lower in accordance with AS/NZS 1158.3.1:2005 or where there is no lighting.

Table 3.2.3.2 - Maximum luminous intensity per luminaire for 6pm - 11pm period

Column 1 Area description		Column 2 Maximum luminous intensity from each luminaire	
Size of area	Controlling dimension	Level 1 control	Level 2 control
Large	>75m	7,500 cd	100,000 cd
Medium	≥25m U <75m	7,500 cd	50,000 cd
Small	<25m	2,500 cd	25,000 cd

Note - Maximum luminous intensity from each luminaire - Limits apply to each luminaire (irrespective of the number on a head frame) in the principle plane, for all angles at and above the control direction, when aimed in accordance with the installation design (see clause 5.3.2.1 of AS 4282-1997: Control of the obtrusive effects of outdoor lighting).

Note - Controlling dimensions - See figure 5.1 of AS 4282-1997: Control of the obtrusive effects of outdoor lighting.

Note - Level 1 control is appropriate for development control of environmentally sensitive areas ie. where the existing environment is of high quality, where adjoining premises are close to the installation, where they are residential in nature, where the existing ambient light levels are low and where the community requires the best available environmental safeguards to be applied. As the use of Type C cut-off luminaires specified in Appendix D of AS 4282-1997: Control of the obtrusive effects of outdoor lighting is likely to be necessary for Level 1 control, the implementation of this level of control will normally be possible only for lighting applications that require relatively high illuminances over areas that are small to medium in size, eg. lighting for tennis courts or hockey fields. However, Level 1 control may also be suitable for larger areas where lower illuminances are appropriate, e.g. for car parks and outdoor storage areas.

Note - Level 2 control will permit the use of a wide range of currently used lighting techniques but will limit intensities in the control direction to what might reasonably be expected by careful attention to design and the selection and aiming of luminaires, especially for applications involving Type A luminaires specified in Appendix D of AS 4282-1997: Control of the obtrusive effects of outdoor lighting.

3.2.4 Radiation emission standard

- The radiation emission standard is 100 microtesla (1000mG) for up to 24 hours a day at ground level.

3.2.5 Vibration standard

- Development is to be designed to meet the preferred vibration standards identified in Table 3.2.5.1 - Preferred weighted rms values for continuous and impulsive vibration acceleration (m/s²) 1/80 Hz and Table 3.2.5.2 Acceptable vibration dose values for intermittent vibration (m/s^{1.75}) in this planning scheme policy.

Table 3.2.5.1 - Preferred weighted rms values for continuous and impulsive vibration acceleration (m/s²) 1/80 Hz

Location	Assessment period*	Preferred values	
		z-axis	x- and y- axis
Continuous vibration			
Critical areas#	Day- or night-time	0.0050	0.0036
Residential uses	Daytime	0.010	0.0071
	Night-time	0.007	0.005
Office, educational establishment and place of worship	Day- or night-time	0.020	0.014
Industry uses	Day- or night-time	0.04	0.029
Impulsive vibration			
Critical areas#	Day- or night-time	0.0050	0.0036
Residential uses	Daytime	0.30	0.21
	Night-time	0.10	0.071
Office, educational establishment and place of worship	Day- or night-time	0.64	0.46
Industry uses	Day- or night-time	0.64	0.46

Note - * Daytime is 7.00am to 10.00pm and night-time is 10.00pm to 7.00am.

Note - [#] Critical areas include hospital operating theatres and precision laboratories where sensitive operations are occurring. There may be cases where sensitive equipment

or delicate tasks require more stringent criteria than human comfort criteria specified above. Stipulation of such criteria is outside the scope of this policy and other relevant standards should be referred to. Source: BS 6472-1992.

Table 3.2.5.2 Acceptable vibration dose values for intermittent vibration (m/s^{1.75})

Location	Daytime*	Night-time*
	Preferred value	Preferred value
Critical areas [#]	0.10	0.10
Residential uses	0.20	0.13
Office, educational establishment and place of worship	0.40	0.40
Industry uses	0.80	0.80

Note - * Daytime is 7.00am to 10.00pm and night-time is 10.00pm to 7.00am.

Note - # Critical areas include hospital operating theatres and precision laboratories where sensitive operations are occurring. There may be cases where sensitive equipment or delicate tasks require more stringent criteria than human comfort criteria specified above. Stipulation of such criteria is outside the scope of this policy and other relevant standards should be referred to. Source: BS 6472-1992.

3.2.6 Sewer admission standards

3.2.6.1 General limits

1. Table 3.2.6.1.1 - General limits in this planning scheme policy identifies the general limits which are not to be exceeded by trade waste which is discharged to the sewerage system.

Table 3.2.6.1.1 - General limits

Column 1 Parameter	Column 2 Concentration	Column 3 Total mass load
Temperature.	38 °C	None applicable.
pH.	6-10	None applicable.
Biochemical oxygen demand (BOD ₅).	600 mg/l	The total mass load does not exceed the capacity of the sewerage system to accept the trade waste.
Chemical oxygen demand (COD).	1500 mg/l	The total mass load does not exceed the capacity of the sewerage system to accept the trade waste.
Total organic carbon (TOC).	1200 mg/l	The total mass load does not exceed the capacity of the sewerage system to accept the trade waste.
Non filterable residue (NFR).	600 mg/l	The total mass load does not exceed the capacity of the sewerage system to accept the trade waste.
Total dissolved solids (TDS).	5,000 mg/l	None applicable.
Total oil/grease.	200 mg/l	None applicable.
Gross solids.	The non-faecal gross solids has a minimum linear dimension of less than 20mm and a quiescent settling volume of less than 3m per hour	None applicable.
Colour	The trade waste does not result in any discernible colour in the discharge from the treatment works.	None applicable.
Odour	The odour of the trade waste is not detectable in 1% dilution and does not exceed the air emission standards for odour in section 1.2 (Air emission standards) in schedule 3 (Standards).	None applicable.
Chlorine (as CL ₂).	10 mg/l	None applicable.
Sulphate (as SO ₄).	2,000 mg/l	None applicable.
Sulphite (SO ₂).	100 mg/l	None applicable.
Surfactants - Anionic (MBAS).	500 mg/l	None applicable.
Aluminium (as Al).	100 mg/l	None applicable.
Iron (as (Fe)	100 mg/l	None applicable.
Ammonia plus ammonium ion (as N).	100 mg/l	None applicable.
Total Kjeldahl Nitrogen (as N).	150 mg/l	None applicable.
Phosphorus (Total P).	50 mg/l	None applicable.
Manganese (as Mn).	100 mg/l	None applicable.

3.2.6.2 Specific limits for inorganics

1. Table 3.2.6.2.1 - Specific limits for inorganics in this planning scheme policy identifies the specific limits which are not to be exceeded by trade waste which is discharged to the sewerage system.

Table 3.2.6.2.1 - Specific limits for inorganics

Column 1 Parameter	Column 2 Concentration Mg/l
Boron (B)	100
Bromine (Br ₂)	10
Fluoride (F)	30
Cyanide (CN)	5
Ferrocyanide (Fe(CN) ₆)	50
Sulphide (S)	5

3.2.6.3 Specific limits for metals

1. Table 3.2.6.3.1 - Specific limits for metals in this planning scheme policy identifies in:
 - a. column 2, the levels of concentration which are not to be exceeded by trade waste which is discharged to the sewerage system;
 - b. column 3, the maximum mass loads which are not to be exceeded by trade waste which is discharged to the sewerage system unless in the case of a metal other than chromium hexavalent the level of concentration complies with column 2.

Table 3.2.6.3.1 - Specific limits for metals

Column 1 Parameter	Column 2 Concentration (mg/l)	Column 3 Maximum mass load g/day ⁽¹⁾
Arsenic (As)	5	15
Barium (Ba)	20	60
Cadmium (Cd)	2	6
Chromium (Cr) - Total	20	60 ⁽²⁾
Chromium (Cr) - Hexavalent	10	0
Cobalt (Co)	10	30
Copper (Cu)	10	30
Lead (Pb)	10	30
Mercury (Hg)	0.005	0.015
Nickel (Ni)	10	30
Selenium (Se)	5	15
Silver (Ag)	5	15
Tin (Sn)	10	30
Zinc (Zn)	10	30

¹ Maximum mass load is based on a discharge volume of 3kL/day.

² Hexavalent chromium is to be reduced to trivalent chromium.

3.2.6.4 Specific limits for organics

1. Table 3.2.6.4.1 - Specific limits for organics in this planning scheme policy identifies the specific limits for organics which are not to be exceeded by trade waste which is discharged to the sewerage system.

Table 3.2.6.4.1 - Specific limits for organics

Column 1 Parameter	Column 2 Concentration (mg/l)
Formaldehyde (HCHO)	50
Phenolic compounds (as Phenol)	100
Pentachlorophenol	5
Petroleum hydrocarbon (non-flammable)	30
Halogenated Aromatic Hydrocarbons (HAH)	0.002
• Polychlorinated biphenyls (PCB)	0.002
• Polybrominated biphenyls (PBB)	0.002
Polynuclear Aromatic Hydrocarbons (PAH)	5
Pesticides	
• General (insecticides/herbicides/fungicides)	1.0
• Organophosphates	0.1
- Azinphos-methyl	
- Azinphos-ethyl	
- Coumaphos	

- Demeton - Dichlorvos - Disulfoton - Fenitrothion - Fenitron - Malathion - Metamidophos - Mevinphos - Omethoate - Oxydemeton- methyl - Patathion - Triazophos - Trichlorfon	
• Organochlorines - Aldrin - Chlordane - DDT - Dieldrin - Heptachlor - Lindane	0.001 0.006 0.003 0.001 0.003 0.100

3.2.6.5 Substances not to be discharged to the sewerage system

1. The trade waste discharged to the sewerage system does not contain:
 - a. a flammable and explosive substance; or
 - b. a radioactive substance; or
 - c. a pathological and infections waste; or
 - d. a cytotoxic waste; or
 - e. a genetically engineering organism; or
 - f. rainwater and uncontaminated water; or
 - g. a substance which is not listed in Table 3.2.6.1.1 - General limits, Table 3.2.6.2.1 - Specific limits for inorganics, Table 3.2.6.3.1 - Specific limits for metals, Table 3.2.6.4.1 - Specific limits for organics in this planning scheme policy.

3.3 Waterway and wetland enhancement works

3.3.1 Riparian corridor revegetation and weed control

1. Riparian corridor revegetation and weed control works within a waterway or wetland buffer area achieves the following:
 - a. existing locally native vegetation within the waterway area or wetland buffer is retained and protected;
 - b. all declared weeds and environmental weeds are eradicated from the waterway area and wetland buffer in a planned and staged process which protect bank stability and existing locally native vegetation and habitat values;
 - c. locally native vegetation, including trees, shrubs and groundcovers are planted and established within the waterway area or wetland buffer to achieve the desired vegetation structure and composition show in Figure 3.3.3.1 - Desired riparian vegetation structure showing multiple layers in this planning scheme policy;
 - d. in-stream habitat elements such as logs, snags, overhangs and vegetation are retained wherever possible;
 - e. where linear infrastructure eg road, cross a waterway area or wetland buffer it is designed and constructed to maintain and enhance terrestrial and aquatic fauna movement.

3.3.2 Waterway terrestrial and aquatic fauna movement

1. Where linear infrastructure, such as a road crossing a waterway area or wetland buffer, it is designed and constructed to:
 - a. maintain and enhance aquatic fauna movement in accordance with the Department of Agriculture, Fisheries and Forestry Code for accepted development requirements for operational works that is constructing or raising waterway barrier works;
 - b. maintain and enhance terrestrial fauna movement in accordance with the Queensland Government Fauna Sensitive Road Design Manual Volume 2: Preferred Practices.

3.3.3 Near-natural hydrology reinstatement works

1. Near-natural hydrology reinstatement works within a waterway or wetland buffer area achieves the following:
 - a. artificial structures such as concrete lining, dams, are removed from the waterways, unless it can be demonstrated that there is a greater community or environmental need for the structure to be retained;
 - b. where locally native riparian vegetation has been removed it is reinstated in accordance with section 3.3.1(1)(c) of this planning scheme policy;
 - c. development implements the frequent flow and waterway stability objectives set out in Chapter 4 of State Planning Policy 4/10 Guideline Healthy Waters;
 - d. the natural water levels and hydrology are returned to wetlands that have been previously drained.

Figure 3.3.3.1 - Desired riparian vegetation structure showing multiple layers

