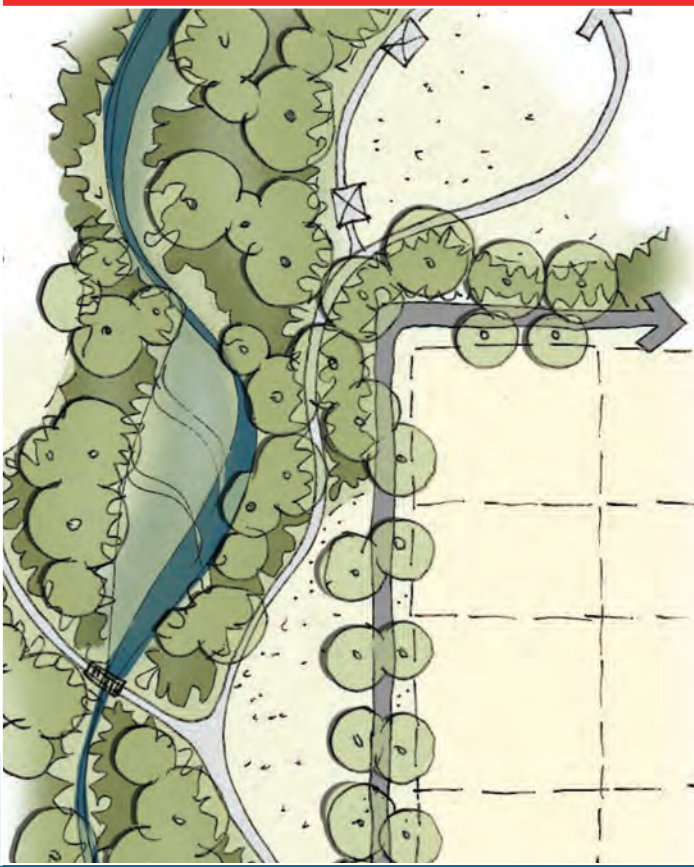
Economic Development Queensland

Development interfaces



PDA guideline no. 18
May 2015

Queensland Government

Contents

Introduction

Purpose of the guideline

This guideline outlines the Priority Development Area (PDA) principles and standards for planning and designing the interfaces between different land uses to ensure that potential impacts are reduced to acceptable levels in PDAs in Queensland.

This guideline should be read in conjunction with the provisions of PDA development schemes, interim land use plans (ILUPs) and other PDA guidelines and practice notes. A development scheme or ILUP may specify a different requirement or specific response to address interface matters.

In consultation with the Minister for Economic Development Queensland (MEDQ) and other relevant parties, applicants may propose alternative innovative solutions which do not comply with the following standards but meet the PDA wide or related provisions of the MEDQ.

The documents referenced in this guideline are the version current at the time a decision is made on a development application. The MEDQ may have regard to other documents in assessing development applications.

Goals

The MEDQ is committed to ensuring development within PDAs does not result in:

- sensitive land uses being exposed to unreasonable levels of air, noise and odour emissions or reduced levels of visual amenity that impact on people's health, amenity and wellbeing
- the encroachment of incompatible development which may compromise the efficient use of infrastructure or activities of state significance (eg airports, industrial areas, agricultural land)
- unreasonable impacts on areas of high scenic amenity value or conservation.

Good planning and design can enable potential impacts to be avoided, minimised and/or mitigated.

Principles

The MEDQ's preferred approach is to address land use interface issues at three levels:

1. at the strategic level - through land use planning at the PDA wide level to avoid new interface and transition impacts;
2. at the neighbourhood level - through transition and mitigation measures within a precinct through land use and subdivision design where new land uses are proposed in an emerging community or new infill development area; and
3. at the individual level - through a combination of siting, building design, landscaping or other mitigation measures at an individual site level.

Planning and design of interface areas within PDAs should be informed by technical specialist advice where necessary.

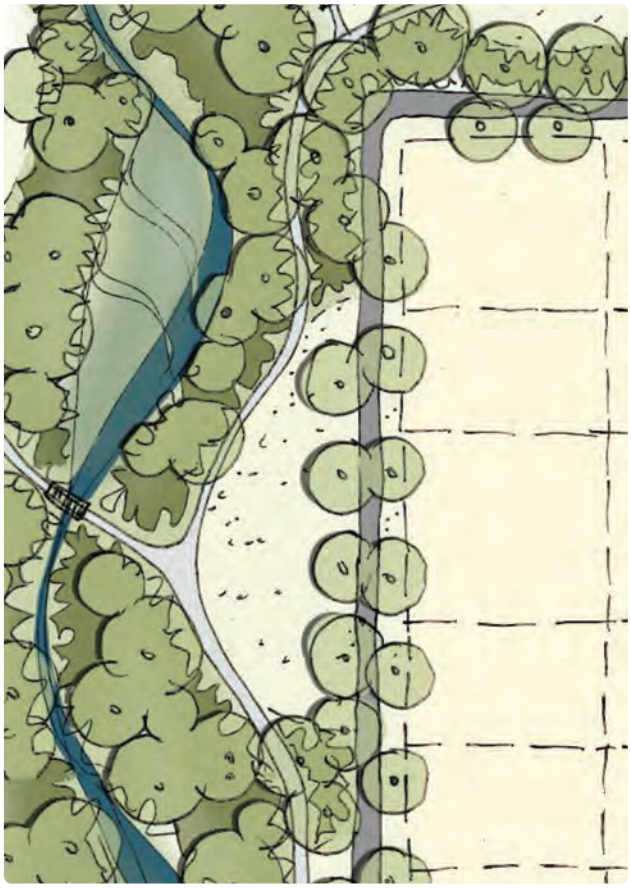
Application of guideline

This guideline only addresses land use planning, site planning and building design matters. Other requirements for managing water, air, noise and other pollutants are prescribed by State legislation, principally the Environmental Protection Act 1994 and associated policies. These requirements are described in PDA Guideline 14 Environment and Natural Resources Sustainability.

Potential land use interface issues need to be considered and if necessary addressed in accordance with this guideline when preparing:

- context plans
- subdivision plans
- plans of development or
- development applications for a specific lot or site.

Applicants are encouraged to discuss land use interface issues with the MEDQ at an early stage in the preparation of development proposals to ensure appropriate mitigation measures are considered.



Land use interface issue addressed in plans

Assessing potential interface issues

An analysis of the site will identify and scope the nature of the interface issues that need to be addressed and identify any sensitive land uses. Sensitive land uses generally include childcare centre, educational establishment, health care service, hospital, house, multiple residential, other residential, relocatable home park and short term accommodation.

If the nature of the impact or likely impact is agreed with the PDA to be of low impact or able to be mitigated, applicants may not be required to prepare and submit supporting reports.

Figures 1 and 2 illustrate the different scales of interface issues that may need to be addressed by applicants.

Figure 1: Building design mitigates noise from a busy street

Figure 2: Assessing local area visual impacts to retain views to natural features

Source: Verge Urban Landscape Architecture

Interface issues assessment

The MEDQ will consider a range of mitigation options to address identified interface issues. Options and solutions may range in scale from broad land use planning, transitional uses, building form controls, hard or soft buffers, building design or a combination of mitigation measures to achieve an optimal outcome considering mitigation, sustainability, land management and maintenance issues.

Table 1 outlines the range of interface issues that may arise. This table is not meant to be exhaustive and other site specific issues may need to be considered in consultation with the MEDQ. This table also outlines possible mitigation strategies, options and reference documents[1] that may require consideration in the preparation of a proposal.

Table 1. Types of interface issues for assessment

Nature of interface consideration	Assessment required	Possible mitigation strategies							Reference documents[1]
		Land use location	Subdivision and allotment design	Transitional development	Building design	Integrated landscape strategies	Landscape buffer	Acoustic barriers	
Scenic or visual amenity	Visual impact assessment	✓	✓	✓	✓	✓	✓		Refer attachment A - visual impact assessment process
Ecological (vegetation, waterway or wetland interface)	Environmental assessment	✓	✓	✓	✓	✓	✓		Environmental Protection Act 1994 Environmental Protection Regulation 2008 State Planning Policy (SPP) 4/10 Healthy waters DERM Queensland wetland buffer planning guideline
Visual privacy	Address in supporting planning report			✓	✓	✓	✓		
Overshadowing/ solar access	Shading analysis		✓	✓	✓				

1 Apply current version of standards relevant at time of development

Nature of interface consideration	Assessment required	Possible mitigation strategies							Reference documents[1]
		Land use location	Subdivision and allotment design	Transitional development	Building design	Integrated landscape strategies	Landscape buffer	Acoustic barriers	
Existing significant uses or infrastructure	Site analysis and consultation as required	✓	✓		✓				SPP 1/02 Development in the vicinity of certain airports and aviation facilities SPP 2/07 Protection of extractive resources SPP 1/92 Development and the conservation of agricultural land
Intensity or scale of development	Address in supporting planning report	✓	✓	✓	✓	✓	✓		
Noise	Acoustic report	✓	✓	✓	✓	✓	✓	✓	Resources and references as listed in PDA Guideline No 14 Environment and Natural Resources Sustainability Environmental protection policies under the Environmental Protection Act 1994 AS 2021-2000: Acoustics - aircraft noise intrusion - building siting and construction NMP 1.3 Entertainment precincts Queensland Development Code SPP 5/10 Air, noise and hazardous materials
Air pollutants, odour	Air quality report	✓	✓	✓	✓	✓	✓		
Light pollution		✓		✓	✓		✓		
Hazardous materials		✓		✓			✓		

Mitigating potential impacts

Proposals may require the consideration of multiple possible interface issues such as scenic amenity, ecological or noise impacts. For example, a significant road proposal or the location of development adjacent to an existing or planned major road may require visual impact assessment in particular, along with the consideration of other environmental impacts.

Figure 3 illustrates a solution that includes a range of strategies to achieve a positive interface outcome.

Matters to be considered in the development of interface mitigation options include:

- different perspectives and viewpoints, including existing residents, new residents or businesses and visitors, that are both receptors and generators of impacts
- outcomes which deliver multiple benefits or multiple functions eg. land use buffers incorporating waterway and greenspace corridors which deliver waterway, scenic and open space benefits, riparian vegetation protection or water quality
- crime prevention through environmental design (CPTED) to create supportive environments
- ownership, maintenance and management arrangements.

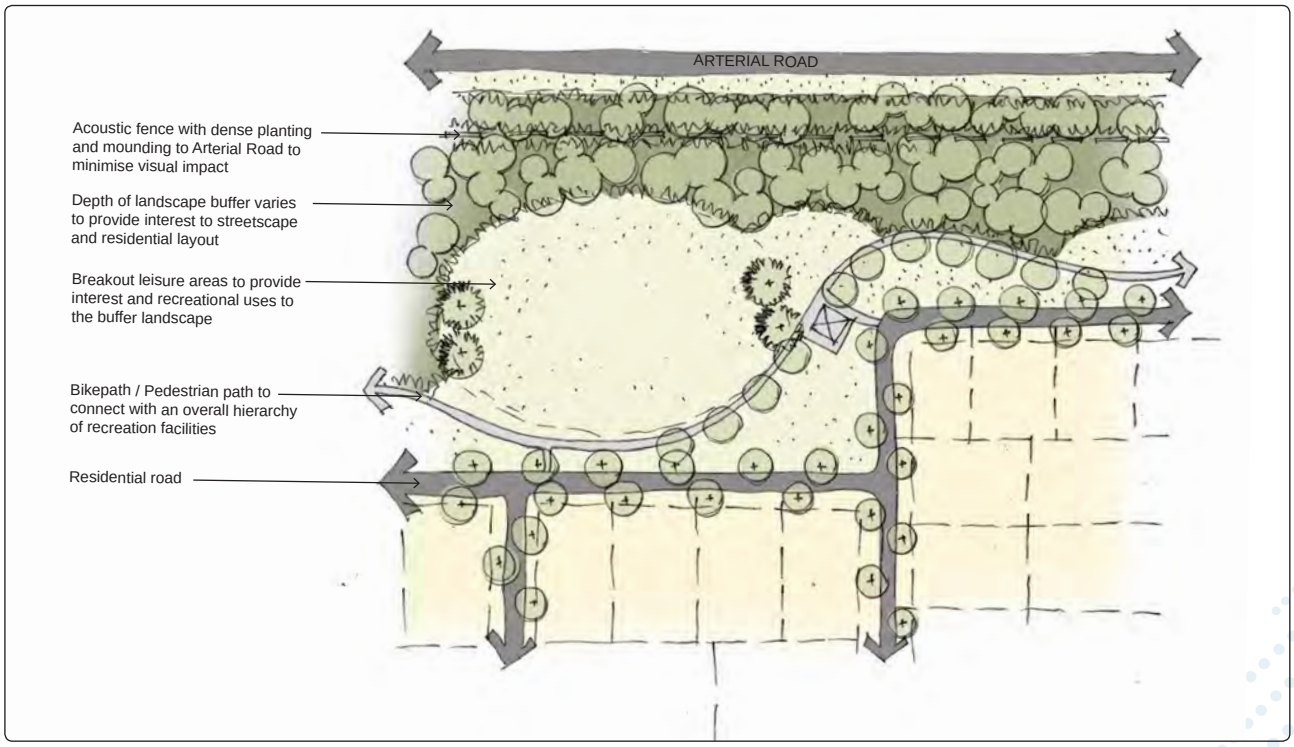


Figure 3: Indicative highway / residential interface

Mitigation strategies and examples

The MEDQ considers a range of strategies at the PDA wide planning scale to ensure appropriate interfaces are achieved between the PDA and adjoining areas, between uses within the PDA and, to key infrastructure and existing uses. Similarly, potential interface and impact issues externally and internally within individual development sites within a PDA should be considered early in the design process to ensure integrated solutions are developed.

The following strategies may be appropriate for a range of scales and in a variety of situations. The MEDQ encourages the preparation of proposals which address potential interface issues in a meaningful way and do not rely on add-on details or built or landscape elements that will be difficult to maintain in the longer term.

The following mitigation strategies and examples are not intended to be exclusive but are provided to illustrate potential mitigation measures in a range of common situations.

The strategies outlined in this guideline include the following.

- Land use location
- Transitional development
- Subdivision and allotment design
- Building design
- Integrated landscape strategies
- Landscape buffers
- Noise barriers

Land use location

At the context planning stage land use allocation should consider existing uses and users within and adjoining the PDA to ensure positive interfaces can be achieved considering strategic and site opportunities.

Land uses should be allocated so that incompatible land uses are separated by natural (eg. an existing ridgeline or waterway corridor) or constructed (eg. major roads, open space) features. Adjacent to industrial and rural areas, land uses may be required to transition to long term preferred patterns to ensure that existing lawful activities can continue to operate.

In PDAs where land uses are transitioning from industrial to residential, supporting noise and air quality reports will be required to demonstrate that off-site impacts from existing uses will not prevent the establishment of new development and achievement of a comfortable residential environment at the time of development.

Figure 4 provides an example where a major road forms the boundary between land uses. An intermediate mixed use zone is used to separate an industrial / employment area from a sensitive residential area.

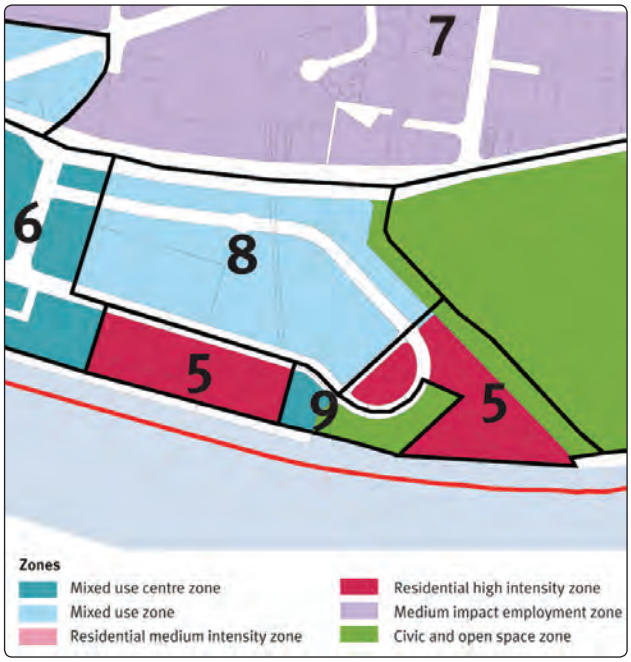


Figure 4: Extract from Northshore Hamilton PDA zoning and precinct plan

Transitional development

Planning and design controls can be used to reduce the scale and intensity of development to acceptable levels close to sensitive uses. Typical controls used in this fashion include:

- building height
- site cover
- plot ratio
- building setbacks.

In addition more stringent limits can be applied to the acceptable range of activities in specific locations. These controls could be applied to particular areas or lots as part of a development approval or plan of development. Figure 5 provides an example of how building heights can be used to reduce development intensity in specific locations.

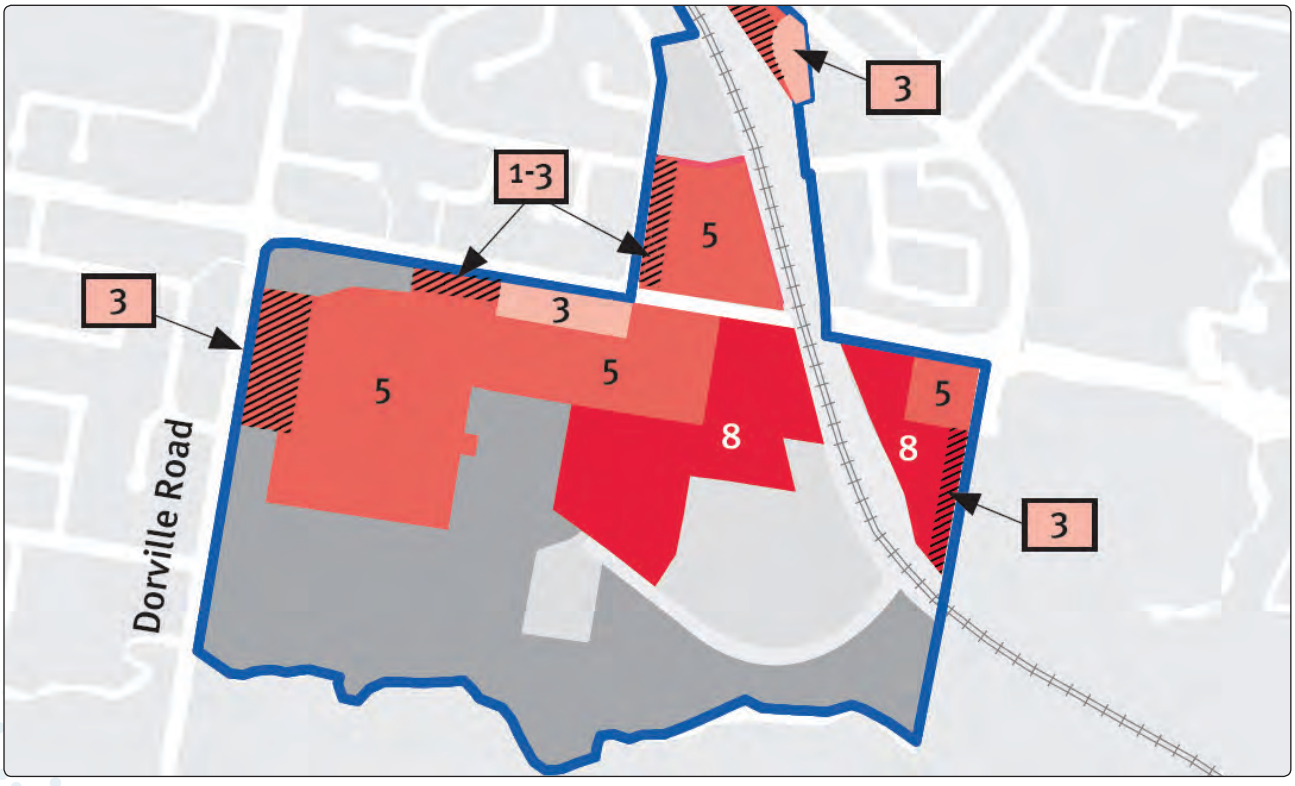


Figure 5: Heights stepping down from 8 storeys to 1-3 storeys adjoining existing residents

Subdivision and allotment design

Subdivision and allotment design can be used to address potential interface issues and achieve an appropriate transition from lower intensity existing uses to new development.

Land use changes should be managed along rear boundaries unless land uses are compatible in nature and contribute to a mixed-use outcome. Local streets should not be used as dividers between land uses as this can undermine the achievement of coherent streetscape and positive neighbourhood identity and amenity. In certain situations, major roads may perform this function.

Allotment widths and boundaries should align with existing adjoining residential development where possible. This strategy may involve locating larger lots adjacent to existing residents transitioning to smaller lots within the neighbourhood. Figure 6 provides an example of a lot layout that is sympathetic to an existing adjoining residential area.

For super lots for business, industry or higher intensity residential development, interface issues need to be considered. For example, shared driveways and access roads to parking or servicing areas could be considered to minimise interface issues with adjacent residents.

Subdivision design can be used to minimise the impacts of vehicle access on adjoining land uses and streets. Figure 7 provides an example of rear lane access used in this way.

These responses provide for the creation of a positive interface with private spaces located further from the source of potential noise or air quality impacts providing the best opportunity to achieve comfortable and attractive private open space.

Figure 6: Sympathetic boundary alignment to existing residences

Figure 7: Fitzgibbon Chase rear lane access

Building design

Building design including orientation, heights, materials and siting can be used to ensure that amenity is provided between new residents and existing adjoining residents.

Designers should consider and achieve a clear distinction between public fronts and private backs. Generally, buildings that orient to the street and maintain an active front and passive rear are less likely to result in amenity impacts and interface issues to adjoining residents. This approach has multiple benefits in terms of achieving "eyes on the street" to support best practice CPTED.

Buildings should be set back, stepped, separated or screened to address amenity and privacy considerations. In some instances, built-to-boundary walls or high level windows may be used to ensure privacy is maintained. No one solution is mandated and the MEDQ will consider a range of siting and design options. In some cases, specific requirements may be set out in development schemes.

Building envelope controls may be required on lots adjoining existing residential development. A Plan of Development (PoD) may therefore be required to accompany applications for reconfiguring a lot in this situation. Refer to the relevant PDA practice note for further information on plans of development.

In particular locations or when considering combinations within mixed use buildings, the standard of building construction may provide appropriate impact mitigation. For example, as outlined in the Queensland Development Code (QDC) NMP 1.3 Entertainment precincts, noise attenuation matters need to be considered where noise sensitive uses are located within a precinct or building where a restaurant, club, hotel, indoor sports or recreation facility, night club or music venue may be located. Whilst this is a building matter, the location of such land uses and level of assessment for mixed use buildings are planning matters that will be considered when assessing development applications.

Buildings can be designed, orientated and constructed to reduce the impact of noise by:-

- locating rooms most sensitive to noise (eg. bedrooms) futhermost from the noise source
- using construction, insulation and glazing materials with a high noise transmission loss in accordance with relevant Australian standards.

To address external impacts at the site and building scale the following strategies should also be implemented:

- air conditioning units, refrigeration units or other service equipment are located so they are not visually obtrusive and do not cuase adverse visual or noise impacts on adjoining premises
- ensure rubbish bin storage areas are unobtrusive
- locate vehicle accesses, bin storage areas and other similar activities away from sensitive uses.

Figure 8: The combination of heavy and lightweight materials provide for privacy, CPTED and building articulation objectives to be met.

Figure 9: Privacy delivered by landscaped entry rather than fencing

Integrated landscape strategies

The landform, landscape and other existing features of sites such as remnant vegetation, waterway corridors, heritage buildings or culturally significant features, should be respected and considered in the design of proposals. These elements can provide anchors in the landscape for existing and new residents.

Visual and scenic amenity analysis of greenfield development sites can be used to underpin the development of a landscape masterplan. This type of plan helps to convey to existing and new community members what valued landscape elements will be retained and enhanced as development proceeds over a number of years and provides a blueprint for future development.

The MEDQ encourages the preparation and inclusion of landscape masterplans and strategies which address and consider:

- the retention and enhancement of local ecological systems including significant remnant vegetation and corridors for the movement of local fauna within the site and to habitat in neighbouring areas;
- the development of a cohesive open space network;
- the establishment of spaces which offer a range of active and passive recreation opportunities complimentary to residential areas, civic areas and places of work;
- the development of cohesive pedestrian and cyclist movement systems, integrated with open spaces, major circulation routes and local destinations;
- the retention or enhancement of significant vegetation in prominent locations such as hilltops, entries or along riparian corridors;
- the use of mature tree stock in prominent locations; and
- the use of vegetation complementary to local regional ecosystems, where appropriate, to encourage local biodiversity and enhancement of local ecological values.

Key elements of the landscape strategy, such as those shown in Figures 10 and 11, can be used to provide physical and visual separation between incompatible uses.

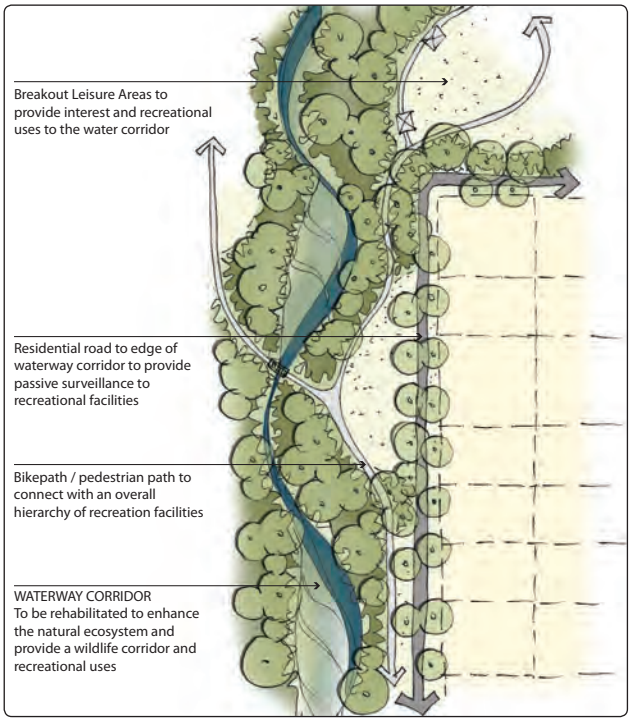


Figure 10: Multi-purpose waterway corridor strategic opportunity

Figure 11: Recreation park incorporating storm drainage elements at Fitzgibbon Chase

Landscape buffers

The use of single purpose landscape buffers as a mitigation measure as a first response is not encouraged as it is a relatively inefficient and high maintenance option. This option should be considered in parallel with other land use, subdivision design and siting measures. However, in some circumstances, for example adjacent to major transport corridors, landscape buffers can play an important role.

Where a landscape buffer is proposed, design should consider the inclusion of species that:

- are suited to local conditions
- are aligned with local regional ecosystems as defined under the Vegetation Management Act (QLD), where relevant, or local ecological values, i.e. through the use of local native endemic species
- provide relatively quick visual buffering through the inclusion of fast-growing native pioneer species
- provide a layered vegetation grouping to optimize visual buffering from a variety of viewpoints. Planting would include a continuous canopy layer, with mid-storey and understorey or groundcover layers and appropriate transition from low-growing species to tall species along key interfaces such as movement corridors. The overall height of the landscape buffer required to provide visual buffering will be limited by species and site conditions, however a mature height of 20m minimum should be sought.

Figures 12 and 13 provide examples of the use of landscape buffers to reduce the noise and visual impacts of major transport corridors on sensitive adjoining uses.

Ownership, management and maintenance issues are to be considered and resolved at the design stage to ensure the proposed mitigation benefit is guaranteed into the future. Ownership and management options for consideration include:

- public ownership where significant areas are proposed to be reserved given multiple benefits/ functions such as biodiversity, waterway or greenspace linkage corridor benefits can be established
- common management where body corporate or group titling (check / confirm terms) is proposed
- easements.

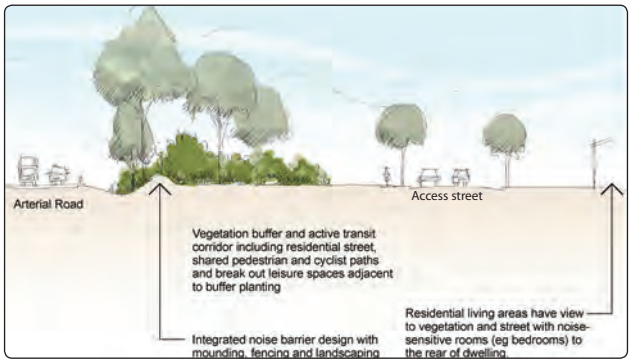


Figure 12: Indicative section - Residential road and development

Source: Verge Urban Landscape Architecture

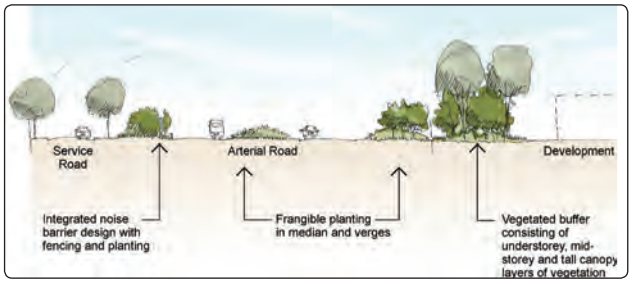


Figure 13: Indicative section - Arterial road and development

Source: Verge Urban Landscape Architecture

Noise barriers

The use of noise barriers and acoustic fences should be considered as part of an overall noise attenuation strategy and not in isolation. Noise barriers can be considered along with other strategies such as subdivision layout, building siting and landscaping to achieve a positive interface between roads or industry and sensitive land uses.

The MEDQ supports integrated noise barrier design, whereby the issues outlined below are considered along with site features to achieve the desired noise levels:

- safety requirements
- maintenance requirements
- public amenity issues such as privacy, shading, air circulation and views
- fauna movements
- visual considerations
- community art
- site conditions
- drainage requirements.

For further information on integrated noise barrier design refer to the Department of Transport and Main Roads publication, Road Traffic Noise Management: Code of Practice.

Local conditions and desired outcomes should be considered along with interfaces and transitions to achieve an integrated outcome. Figure 14 illustrates an example where the driver's experience has been considered and views have been retained through a mixture of materials.

Figure 15 illustrates the positive impact fringing vegetation can have for users and adjacent communities mitigating noise and visual impacts.

Figure 14: Highway noise barrier treatment

Figure 15: Major road fringed with remnant vegetation

Appendix A

Visual impact assessment process

Visual assessment considers the potential visual impacts associated with a Project, where a "project" is considered to be a modification through development or change in land use of an existing landscape. The assessment is primarily concerned with a project's surface works, including mitigation measures delivered as part of the Project. Evaluation of potential impacts is undertaken in regard to areas used by the public and private properties, the values associated with the viewed landscape and the degree and type of modification to the landscape produced by a Project.

Methodology

The following methodology for visual assessment has been adapted from the Guidelines for Landscape and Visual Assessment (The Landscape Institute and IEMA, second edition, Spon Press, 2002) and also takes into account the principles outlined in Implementation Guideline No. 8, Identifying and Protecting Scenic Amenity Values (from the South East Queensland Regional Plan 2005-2026, Qld Government Office of Urban Management, September, 2007). The latter document is a regional planning tool for the protection of areas of high scenic value and retention of key open space at a regional level.

The following methodology is intended as a guide only as the methodology for each site needs to consider the scale of assessment and nature of the proposal and timelines. Referral to the primary references, above, is recommended.

The visual assessment method described below consists of:

- the establishment of baseline data to identify the visual catchment, the existing environment and scenic values of the subject area;
- the assessment of potential impacts that could result from a project during its construction and ultimate operational phases; and
- recommendation of measures to mitigate against potential impacts to visual amenity.

The three key steps recommended for visual assessment in PDA areas are as follows.

1. Establishment of baseline information

i. Existing condition description and mapping

Description of the existing visual environment to establish the existing condition or baseline against which the visual perception of a project is assessed. This requires study and description of the existing environment using GIS mapping of existing land use, vegetation cover and available regional scenic amenity data. A map should be produced of landscape structure, comprising various landscape units, including, for example, developed/residential, rural, rural-residential, native woodland, plantation, coastal etc.

ii. Identification of target sites

Evaluation of visual assessment is focussed on sites within a potentially viewed landscape known as target sites. At these sites, potential impacts may be expected as a result of modifications arising from surface works undertaken as part of a Project. These may be key public or private viewing points internal or external to the PDA or subject site.

iii. Visual catchment identification

Visual catchment mapping demonstrates indicative areas within the study corridor and its surrounds which have the potential to view target sites. They do not represent the actual ability to view them as this is significantly impacted upon by obstructions produced by vegetation and buildings, viewing distance and atmospheric conditions.

Visual catchments are typically determined using GIS analysis of topographic data, identifying all areas capable of viewing surface works at target sites within a certain distance of each target site. This distance may vary from 1 to 20 kilometres, depending on likelihood of visibility, the degree of modification of a site and the context of a site. For example, a large tower in a natural landscape of low relief terrain may require the assessment of a broader potential visual catchment than a road corridor within an urban environment

iv. Site survey

Site survey needs to be undertaken to ground proof the visual catchment for each target site, assist in selection of representative viewpoints and gather detailed information about sites and impacts of a project that are likely to affect those sites. Elements such as obstructions and other limiting factors to accessing views of target sites would also be sought and recorded.

v. Representative viewpoint selection

Representative viewpoints are to be selected for each target site as vantage points from which Project surface works would be able to be viewed. Each viewpoint should be photographed, the location recorded and viewing context noted, including its significance (at a local, regional or higher order level), the nature of the view and the types of viewers likely to be able to see it.

In all circumstances, representative viewpoints are likely to be selected within publicly accessible areas, unless the terms of reference of a study requires and allows for access to private property.

2. Impact asssessment

Impacts are to be determined in regard to the context of landscape character and modification by a project to the visual amenity of target sites.

Visual impacts are to be evaluated according to their significance, based upon two main criteria, the sensitivity of the location or receptor within the visual environment and the modification likely to be produced by the project, described below.

i. Sensitivity of location or receptor

Sensitivity of a location or receptor refers to the context of the view and the understanding and appreciation of the view by viewers. This is also related to the value that viewers may place upon a view in the context of the locale, in terms of its contribution to local character, providing identifiable local or distant landmarks, or distant panoramas. Evaluation of sensitivity should be considered according to:

- the context, content and quality of a view from a given viewpoint, including the importance of various features within the view (drawn from an understanding of the existing environment and components of landscape structure);
- the expectations, occupation or activity associated with the receptor within the visual environment; and
- the importance of the view in terms of numbers of people affected and frequency or duration of the view.

Examples of sensitivity criteria for a typical assessment are described in Table 1. These are used to describe the sensitivity of location or visual receptor.

ii. Visual modification

Visual modification represents the extent of change to the existing landscape and visual amenity that is likely to occur as a direct result of the project from a given viewpoint. Evaluation of these changes requires identification of:

- the likely changes produced by a project;
- the magnitude of change, i.e. the scale or degree of addition or removal of features of the urban landscape; and
- the nature of change, i.e. the contrast or integration produced by elements of the project with the existing visual landscape.

For example, definitions in Table 2 may be used to describe visual modification, however each site and its context (i.e. urban, natural, world heritage) need to be considered to derive and appropriate series of criteria.

iii. Impact assessment description

Using the criteria of sensitivity and level of visual modification applied to representative viewpoints within the visual catchment, the significance of visual impacts are determined. These are typically characterised qualitatively and defined as part of the study. Refer to the descriptions shown in Table 3 for categorisation of impacts.

3. Mitigation of potential impacts

Where adverse potential impacts are identified, particularly those of a moderate or high magnitude, measures to mitigate against the impacts should be investigated. These could include:

- reducing the degree of modification to the landscape by altering the location or scale of the Project or elements of the Project responsible for the impact;
- reducing or masking the visual prominence of the project or elements of the Project using either retained or introduced vegetation of a scale to screen the Project or by using materials or finishes for elements of the project that are complementary to, or lack distinction within, the viewed landscape; or
- combinations of the above.

Table 1 Sensitivity of location or receptor

Sensitivity	Definition
Low	Views where elements or features of the visual landscape that contribute to the quality and appreciation of a view are limited or lacking within the viewable location. Views associated with sites which are the focus of work or similar activities.
Moderate	Views to elements and features of the visual landscape within a locale that are experienced by a number of viewers on a daily basis including residents, shoppers, workers, recreational users and road and rail users.
High	Views to important elements or features of the landscape that are valued at a broad level as characteristic or iconic to the locale or region.

Table 2 Visual modification definitions

Visual modification level	Definition
No modification	No likely perceivable change to the view with little or no loss to the features or characteristics of the visual landscape. Viewers with an interest in the view would be unlikely to perceive any change.
Small modification	Minor changes to the view resulting from minor changes of elements, features or characteristics of the visual landscape. Viewers with an interest in the view may perceive change during extended viewing duration, however casual viewers may not perceive the change.
Moderate modification	Discernible changes to a view due to changes in elements, features or characteristics of the landscape that are clearly visible. Modification would be immediately discernible to viewers with an interest in the view, however casual viewers may not perceive the change unless attention is drawn to it.
Large modification	Substantial change to a view resulting from major changes to elements, features or characteristics of the landscape that are clearly visible. The modification would be immediately obvious to casual viewers.

Table 3 Impact significance description

Impact significance	Description
Negligible	A negligible modification in the quality of a view of low, medium or high sensitivity.
Low adverse	A small reduction in the quality of a view of moderate sensitivity or a small or moderate reduction in the quality of a view of low sensitivity.
Moderate adverse	A moderate reduction in the quality of a view of moderate sensitivity or a large reduction of a view of low sensitivity.
High adverse	A small, moderate or large reduction in the quality of a view of high sensitivity or a large reduction in the quality of a view of moderate sensitivity.
Low beneficial	A small improvement in the quality of a view of moderate sensitivity or a small to moderate improvement in the quality of a view of low sensitivity.
Moderate beneficial	A moderate improvement in the quality of a view of moderate sensitivity or a large improvement to the quality of a view of low sensitivity.
High beneficial	Any improvement to the quality of a view of high sensitivity or a large improvement to the quality of a view of moderate

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