

# Review of Queensland Industrial Estates 2006–09

Final Report  
25 September 2010

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Compliance and Investigations Branch

Department of Environment and Resource Management

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# 1. Executive summary

In August 2005, a fire occurred at the former business premises of Binary Chemicals, a chemical formulation and storage facility operated by Binary Industries Pty Ltd at the Narangba Industrial Estate.

In response to the fire incident and the resultant environmental harm, the Queensland Government commenced the Accelerated Planning Initiative, comprising a series of whole-of-government projects and activities to address issues associated with planning, managing and regulating industrial land use and industrial activity. The Review of Queensland Industrial Estates led by the Department of Environment and Resource Management (DERM) is one of the Accelerated Planning Initiative projects.

A total of 57 industrial estates were included in the three year program, which commenced in 2006–07. The objectives of the program were:

- to identify any non-compliance with environmental legislation and immediate risks associated with the operation of licensed industries within estates, taking remedial action where required
- to provide a characterisation of each estate based on the actual and potential environmental impact (including environmental nuisance) from the operation of all industries in the estates.

After a risk prioritisation process was undertaken in 2006, 20 estates were prioritised for inspection during 2006–07; 13 estates were inspected during 2007–08, with the remaining 24 estates inspected in 2008–09. The objectives of the inspections were to identify and respond to compliance issues and characterise the industrial estates.

The majority of compliance issues identified in the inspection program related to:

- insufficient stormwater controls
- no, or ineffective, bunding of chemical storage areas
- general housekeeping.

As a result of the inspections, four sites were identified as very high risk and four sites were identified as high risk. All of these eight sites are regulated by DERM.

The 57 estates comprised of a total of 3,261 sites. All sites were inspected during the three year program, including:

- 78 sites with environmentally relevant activities<sup>1</sup> (ERAs) administered by DERM were being conducted
- 565 sites with ERAs administered by local government<sup>2</sup> were being conducted
- 113 sites operating ERAs without approvals
- 2,505 sites that do not require environmental approvals.

Sites regulated by DERM often involve a number of ERAs, whereas local government sites normally involve only one ERA. Out of the total of 3,261 sites inspected, 33 statutory actions were taken and 328 written warnings were issued.

Key findings and related recommendations are presented below, and repeated in the body of the report, in Section 5. These are broken into the areas of compliance strategy and planning, further regulatory activity, good performers, environmental harm including nuisance and unlicensed activities.

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<sup>1</sup> The *Environmental Protection Act 1994* and Environmental Protection Regulation 2008 defines a certain list of activities as 'environmentally relevant activities' (ERAs). For those activities to be lawful (other than mining and petroleum and gas activities), a development approval must authorise the use on the land and the person carrying out the activity must hold a registration certificate and pay an annual fee. The total annual fees payable in respect of an estate provided an objective indication of the nature and scale of industrial activity at each estate.

<sup>2</sup> Administration of a significant proportion of ERAs is devolved to local government. These ERAs are deemed to represent a lower environmental risk (e.g. motor vehicle workshops) although are usually more numerous.

## 1.1 Compliance strategy and planning

Key finding:

KF1 The program involved an assessment of 57 industrial estates comprising 3,261 sites. Only 0.25 per cent (eight) of the sites were assessed as presenting a high or very high environmental risk, and these sites were located across six industrial estates. None of those industrial estates hosted more than two sites assessed as presenting a high or very high environmental risk.

Recommendations:

Rec 1 DERM should further develop its risk assessment processes and tools so that the annual compliance program and plan is targeted at those activities that pose the highest risk to the environment.

Status: In 2008, DERM introduced a new risk assessment guide containing an improved set of risk assessment processes and tools (see Appendix 2). The risk assessment guide is used to inform inspection prioritisation and for use in compliance projects identified under annual compliance plans. The processes and tools contained in the guide are continually being refined to ensure compliance efforts are directed to areas of highest environmental risk.

## 1.2 Further regulatory activity 2010–11

Key finding:

KF2 The program methodology was such that the sites thought (based on preliminary risk assessment) to present high or very high risk were initially identified for inspection in 2006–07. The adequacy of the development conditions was not included in the scope of the project.

Recommendation:

Rec 2 The eight sites identified as presenting a high or very high risk should be the subject of a specific compliance project in 2010–11 to review the performance of, and the regulatory requirements for, these sites including the adequacy of development approval conditions.

Status: A proposal for a strategic compliance project to review the performance and development approval conditions of the eight sites identified as high or very high risk is being developed for 2010–11.

## 1.3 Good performers

Key finding:

KF3 The program focused on identifying non-compliance, rather than good performance; however, it is important to identify and recognise good performance where it occurs so that it can be acknowledged and leveraged to encourage good performance by other industries.

Recommendation:

Rec 3 DERM's compliance strategy should incorporate the identification and acknowledgement of good performance within industrial estates, and use those examples to encourage 'beyond compliance' performance.

Status: DERM compliance teams will work more closely with DERM's EcoBiz team to encourage compliant industrial sites to progress beyond compliance.

## 1.4 Environmental harm including nuisance

Key finding:

KF4 Analysis of complaint data during the program indicated that many environmental nuisance issues (assessed as lower risk through risk assessment tools) may be a result of residential encroachment on land used for industrial purposes.

Recommendation:

Rec 4 A state planning policy containing a specific development assessment code for sensitive land uses should be developed and implemented. This will ensure that there is adequate planning in development assessment decision making and, where necessary, separation of sensitive land uses from industry (including high impact and noxious and hazardous industries) to protect environmental values, including human health and wellbeing, from environmental harm and to protect human safety. This is particularly in relation to events involving fugitive emissions, loss of process control or containment, or fire.

Rec 5 A state planning policy should be developed to ensure that future local planning instruments provide for the separation of land zoned for industry (including high impact industries and noxious and hazardous industries) from land zoned for sensitive uses, and that the policy outcomes of the state planning policy are reflected in regional plans and local planning instruments.

Status: DERM has drafted a new State Planning Policy—Air, Noise and Hazardous Materials (SPP) that addresses the planning and development assessment issues identified in the report. Public consultation on this policy was recently completed. DERM and the Department of Infrastructure and Planning (DIP) are currently analysing submissions and will determine, based on submissions and resolution of issues raised, whether the final SPP progresses.

## 1.5 Unlicensed activities

Key finding:

KF5 Unapproved ERAs were being carried out on 113 (or 3.5 per cent) of the 3,261 sites. Local government regulated 111 of these unapproved ERAs. As local government were collaborators in the industrial estates inspections, action may already have been taken to ensure that these activities are brought within the requirements of the Environmental Protection Act 1994.

Recommendation:

Rec 6 DERM writes to individual local governments about the importance of ensuring that sites involving ERAs that are devolved to them are properly authorised and regularly inspected for compliance. Local government compliance programs should include activities to ensure that land uses on industrial estates are approved<sup>3</sup>.

Status: A letter has been drafted and will be sent to all local government CEOs from the Director-General of DERM regarding the incidence of sites administered by local government found to be conducting ERAs without the appropriate environmental approvals. The letter will be posted following final approval of the report.

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<sup>3</sup> This relates to lawful land uses, as opposed to other regulatory obligations of operators.

## 2. Objectives of the program

### 2.1 Drivers for the Review of Queensland Industrial Estates: Binary Chemicals fire and Accelerated Planning Initiative

In August 2005, a fire occurred at the former business premises of Binary Chemicals, a chemical formulation and storage facility operated by Binary Industries Pty Ltd at the Narangba Industrial Estate.<sup>4</sup>

The fire incident resulted in the release of chemicals into the environment. In particular, large volumes of contaminated firewater flowed into a nearby tributary of Saltwater Creek. Saltwater Creek flows to Hayes Inlet and Moreton Bay. Smoke and other contaminants were also released to air, and nearby residents reported experiencing adverse health effects.

The flow path of the contaminated firewater was across state and local government owned land. The tributary was bunded to contain the contaminated firewater. The Queensland Government then commenced a significant project to remediate the tributary and the affected land. As at the date of this report, final decommissioning of the remediation site has not yet occurred. The financial cost for containment and remediation is approximately \$8,154,443 to date.

In response to the fire incident, the Queensland Government commenced the Accelerated Planning Initiative, comprising a series of whole-of-government projects and activities to address issues associated with planning, managing and regulating industrial land use and industrial activity. The Review of Queensland Industrial Estates led by the Department of Environment and Resource Management (DERM) is one of the Accelerated Planning Initiative projects.

### 2.2 Scope and objectives of the Review of Queensland Industrial Estates

The initial scope of the program was to undertake compliance inspections of sites located on 70 industrial estates. This included 63 industrial estates established by the former Department of State Development and Trade (DSDT) across Queensland, and an additional seven industrial estates identified as containing a concentration of high risk type industrial activities.

Many of the DSDT estates are currently undeveloped, partially developed or containing such benign industries that inspection is not warranted. Therefore, a total of 57 industrial estates were settled for inclusion in the three year program.

The objectives of the program were:

- Objective 1: To identify any non-compliance with environmental legislation and immediate risks associated with the operation of licensed industries within estates, taking remedial action where required.
- Objective 2: To provide a characterisation of each estate based on the actual and potential environmental impact (including environmental nuisance) from the operation of all industries in the estates.

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<sup>4</sup> Narangba Industrial Estate is located approximately 30 kilometres north of Brisbane, and falls within the Moreton Bay Regional Council local government area.

## 3. Methodology

### 3.1 Prioritisation of industrial estates for inspection

In 2006, a desktop assessment was carried out to determine the risk likely to be posed by each of the estates. The assessment was based primarily on an assessment of the total annual fees charged for carrying out environmentally relevant activities (ERAs) on each estate.

Twenty estates were prioritised for inspection during 2006–07. Thirteen estates were inspected during 2007–08, with the remaining 24 estates inspected in 2008–09.

### 3.2 Overview of methodology for inspection of each industrial estate

The methodology for inspection of each estate was as follows:

- Desktop assessment of the estate, including identification of ERAs, estate drainage, environmental values and sensitive surrounding land uses.
- Engagement with local government to invite its involvement and to acquire information relating to stormwater, local government-administered ERAs and any other local issues.
- Preliminary risk assessment for each site (see further below).
- Full inspection of higher risk sites (see further below).
- Verification of lower risk sites followed by inspections where necessary.
- Action taken (or referred to local government) for non-compliance with environmental legislation.
- Preparation of report for each industrial estate.

### 3.3 Preliminary risk assessment

Every industrial estate was assessed for the actual or potential risk posed to the environment, including the health and wellbeing of the public. This included a consideration of nearby residents and other sensitive areas such as hospitals, schools, child care sites and aged care sites.<sup>5</sup> The preliminary risk assessment included a consideration of the industrial activities under normal operating conditions, as well as in non-routine situations such as major plant failure and fire.

Environmental risks assessed included:

- environmental harm<sup>6</sup> from air emissions, and the release of toxic chemicals and hazardous material into the environment due to activities conducted on the industrial estates or areas during normal operating conditions
- environmental harm from air emissions and the release of toxic chemicals and hazardous material into the environment due to fire
- environmental harm from the contamination of land and waterways due to firewater runoff.

### 3.4 Compliance inspections and risk assessment

Individual sites within each estate were assessed using the qualitative risk analysis procedures adapted from Australian/New Zealand Standard AS/NZS 4360:2004. The risk assessment procedure is set out in Appendix 2.

In analysing environmental risks from the industrial estates or areas, the following factors were considered:

- aggregate sum of annual fees within the estate
- nature of activities
- past performance of activities including environmental incidents

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<sup>5</sup> Risks to neighbouring industrial sites and other commercial sites within the estate were not considered in the assessment. The on-site risks to employees were also not considered as this is an issue managed under the *Workplace Health and Safety Act 1995*.

<sup>6</sup> 'Environmental harm' means any adverse effect on the natural environment, including people and communities. Environmental harm includes 'nuisance', which is something that can be highly obnoxious, offensive or annoying and can be caused by noise, dust, odour, light or any other thing.

- number of complaints received by DERM regarding the activity
- on-site storage and use of flammable liquids and dangerous goods, for example, chemicals, hydrocarbons
- results of previous compliance inspections
- distances separating industrial estates or areas from residential and other sensitive areas
- sensitivity of the surrounding area, for example, catchments that drain into open channels and waterways
- nature and extent of potential impacts on the health and wellbeing of individuals
- cumulative impacts
- relevant information available from other regulatory authorities.

The significance and weighting allocated to each factor was a subjective process based on the experience and professional judgment of DERM officers.

## 4. Results of inspection program

### 4.1 List of industrial estates inspected

Fifty-seven industrial estates in Queensland were inspected during the 2006–09 program. The full list of industrial estates are listed below (Table 1) by year of inspection, and includes the number of sites inspected on each estate.

Year	Industrial estate	No of sites inspected
2006–07	Portsmith (Cairns)	137
	Carole Park & Synergy Park	131
	Bunda	92
	Narangba (2006)	86
	Yatala	67
	Clinton (Gladstone)	63
	Acacia Ridge	56
	Wilsonton (Toowoomba)	50
	South Mackay (Paget) – (Part only)	50
	Emerald	44
	Lytton	44
	Toolooa (Gladstone)	43
	Atherton (aka Tolga)	30
	Yeppoon*	25
	Townsville Port Area *	22
	Innisfail (aka Goondi Bend)	20
	Parkhurst (Rockhampton)	11
	Swanbank *	9
	Townsville State Development Area (TSDA)	8
	Yabulu Industrial Area *	2
2007–08	Kunda Park	348
	Wacol	84
	Crestmead	83
	Cleveland	46
	Bohle	24
	Beaudesert	24
	Moonaboola	21
	Townsville Port Area *	17
	Warwick	13
	Garbutt	10
	Gibson Island	7
	Bowen	2
	Townsville Aviation Park	1
2008–09	Hamilton Industrial Estate	410
	Ernest Junction Industrial Estate	330
	Caloundra Industrial Estate	108
	Noosaville Industrial Estate	98
	Brisbane Technology Park	85
	Molendinar Industrial Park	83
	Beenleigh Industrial Estate	82
	Yandina Industrial Estate	52
	Hervey Bay Industrial Estate	49
	Gympie Industrial Estate	47
	Gold Coast	41
	Coomera Marine Industrial Estate	40
	Roma Industrial Estate	37
	Dalby Industrial Estate	23

Year	Industrial estate	No of sites inspected
	Kingaroy Industrial Estate	23
	Narangba(2008)	22
	Wulkaraka Industrial Estate	19
	Arundel Industrial Estate	13
	Bundaberg Industrial Estate	10
	Murgon Industrial Estate	7
	Nanango Industrial Estate	4
	Kilcoy Industrial Estate	4
	Laidley Industrial Estate	2
	Brisbane Innovation Park	2
<b>Total</b>		<b>3,261</b>

**Table 1. Industrial estates inspected**

## 4.2 Review of Queensland industrial estates individual reports summary

Detailed individual reports were submitted for each of the industrial estates. The content of the reports included:

- descriptions of surrounding land use and distance to nearest receptors
- summaries of the industrial activities and their most likely environmental and nuisance impacts
- cadastral and aerial photos
- historical detail for sites that had historical non-compliance
- non-compliances observed during the field visits.

## 4.3 Review of Queensland industrial estates results summary

The results of the inspections are summarised in below (Table 2).

The highlights are:

- The majority of the non-compliances identified related to activities that were regulated by local government and were referred to the relevant local government for investigation and response.
- Warnings were issued in relation to 328 sites. These related to minor non-compliance with environmental protection legislation. However, if the issues are not rectified, further enforcement action may be taken.
- Statutory actions were taken in 33 cases.

Inspection results	
Number of sites inspected	3,261
Number of DERM-administered ERAs	78
Number of local government-administered ERAs	565
Number of sites carrying out DERM-administered ERAs without approval	2
Number of sites carrying out local government-administered ERAs without approval	111
Number of non-ERA industrial sites	2,505
Follow-up inspection required	156
Warnings issued – DERM or local government	328

Infringement notices – DERM	8
Infringement notices – local government	11
Environmental evaluation required – DERM	7
Transitional environmental programs approved – DERM	1
Environmental protection orders – DERM	5
Prosecution action <sup>7</sup>	1

**Table 2: Inspection results**

#### 4.4 Comment in relation to compliance issues and characterisation

This section provides comment relevant to the objectives of the inspections, which were to identify and respond to compliance issues and characterise the industrial estates.

There were 3,261 sites were inspected. The compliance inspections resulted in 33 statutory actions and 328 written warnings being issued.

The sites represent a spread of 78 sites administered by DERM and 565 sites administered by local government. Approvals were not held by 2,618 sites for carrying out an ERA. Of those, 2,505 sites did not require a development approval and 113 sites were found to be carrying out an ERA without the necessary development approval.

The majority of compliance issues identified related to:

- insufficient stormwater controls
- no, or ineffective, bunding of chemical storage areas
- general housekeeping.

Table 3 provides details of the four sites that were identified as very high risk and the four sites identified as high risk.

Location of individual site	Aggregate environmental score A	NPI rating of activity B	Client performance likelihood C	Consequence land use D	Likelihood matrix E	Consequence matrix F	Environmental risk matrix score G
Bowen	179	5	Moderate	Significant value	Likely	Catastrophic	5/very high
Townsville State Development Area	316	5	Poor	Significant value	Almost certain	Catastrophic	5/very high
Townsville State Development Area	316	4	Poor	Significant value	Almost certain	Catastrophic	5/very high
Yabulu Industrial Estate	316	5	Moderate	Significant value	Likely	Catastrophic	5/very high
Gibson Island	204	5	Poor	Significant value	Almost certain	Severe	4/high

<sup>7</sup> Action taken against Tasman Sheepskin Tannery Pty Ltd – two offences with total fines of \$3,000 – no conviction recorded.

Location of individual site	Aggregate environmental score A	NPI rating of activity B	Client performance likelihood C	Consequence land use D	Likelihood matrix E	Consequence matrix F	Environmental risk matrix score G
Gibson Island	153	4	Poor	Significant value	Almost certain	Severe	4/high
Narangba	114	5	Poor	Significant value	Likely	Severe	4/high
Ernest Junction	66	4	Poor	Significant value	Likely	Severe	4/high

**Table 3: High risk and very high risk sites**

**Key to columns – from risk assessment procedure**

Column A – Aggregate environmental score as identified in EP Regulation 2008. The higher AES activities were selected.

Column B – National Pollutant Inventory (NPI) risk score for particular or similar industry.

Column C – Client performance- compliance history.

Column D – Land use-Ecomaps or wetland and drainage information.

Column E – Matrix of client performance and aggregate environmental score.

Column F – Matrix of land use and National Pollutant Inventory (NPI) risk score.

Column G – Environmental risk matrix score results.

Eight of the 3,261 sites (0.25 per cent) were assessed as high or very high environmental risk:

- Those eight sites were located across six of the 57 industrial estates inspected.
- Of the six industrial estates hosting one or more sites with a high or very high environmental risk, no industrial estate hosted more than two such sites.

The inspections, particularly as they were directed to meeting objective 2, have demonstrated that only a small number and proportion of industrial sites pose a high or very high environmental risk. It has also demonstrated that none of the industrial estates host more than two such sites.

More detailed background information in relation to each of the sites identified as high or very high risk is set out in Appendix 3.

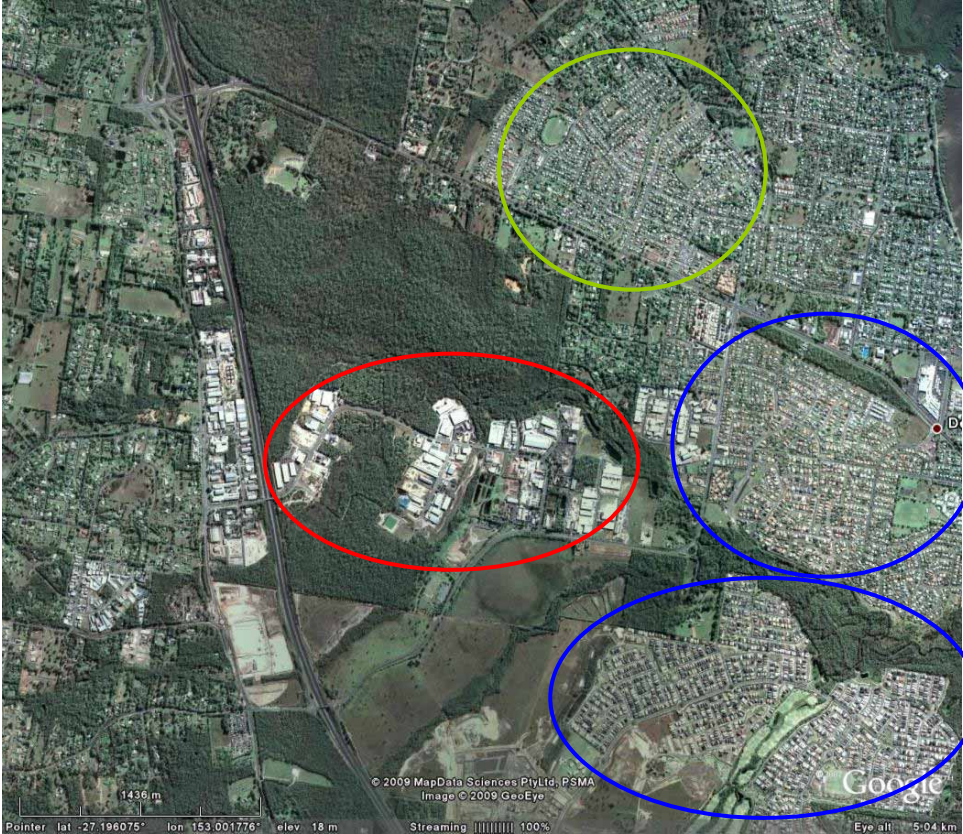
#### 4.4.1 Nuisance issues

Narangba Industrial Estate is a useful case study in demonstrating the issue of residential encroachment influencing the incidence of nuisance complaints. While nuisance complaints regarding noise, odour, etc are often associated with poorly performing industrial sites, many industrial activities are by nature prone to causing nuisance. Sites involved with waste treatment or disposal, metal foundries, composting and tanneries are examples. Greenfield buffer zones can play an important role in providing an adequate separation distance between residents and industry to minimise the impact on residential amenity from industrial nuisance.

The two aerial photographs below demonstrate the residential development around the Narangba Industrial Estate between 2002 and 2008. The industrial estate is outlined in red. The areas outlined by blue are new residential developments to the east and south-east of the estate that have significantly reduced the distance between residents and the industrial estate. Residential density within the green circle has also increased significantly.



Narangba Industrial Estate 2002



Narangba Industrial Estate 2008

## 4.5 Additional comment in relation to risk assessments

Risk analysis is a process of assessing both the consequence of an event and the likelihood of it occurring. Some industrial sites, regardless of actions taken to prevent or minimise environmental harm and operator performance, may be assessed as very high by their very nature or location, for example, metal refineries and fertiliser works.

Risk assessments have identified that six out of 57 industrial estates house activities that pose a high or very high risk to the environment. This risk is associated with normal operational activity and non-routine situations, such as fire events.

Drivers applied in the raw risk assessments were client performance, aggregate environmental scores, surrounding land use, National Pollutant Inventory (NPI) risk scores and the interrelationship of these parameters in the consequence or likelihood matrix.

For each site, location (i.e. distance from sensitive receptors) and the type of activity (ERA) are essentially static. Client performance can drive the potential for risk up or down, although excellent performance will never completely eliminate risk. For example, an oil refinery with a high ERA risk score and a very good performance score<sup>8</sup> can have a 'possible' likelihood, which means a 5–50 per cent likelihood of an incident occurring. However, another oil refinery with a similar profile but with poor performance<sup>9</sup> would classify into the 'almost certain' likelihood, meaning a >95 per cent chance to occur in most circumstances. Both activities still have a residual risk.

The other key factor is the NPI risk score. This is derived from emissions to air by industries where these emissions are above predetermined thresholds. It also considers the population density within one square kilometre of the emitter. For example, through better technology or science, activities may reduce air emissions and consequently move down threshold levels within the NPI rankings and hence reduce the NPI risk score.

Importantly, nuisance was considered in the risk analysis for each site. An analysis of client performance data was analysed in conjunction with the aggregate environmental score. Subsequent to the completion of the inspection program, each estate was analysed using a buffer overlay on the surrounding land use areas. This highlighted estates with close urban proximity and this information has been used to inform the development of the draft State Planning Policy—Air, Noise and Hazardous Materials<sup>10</sup> and to recommend improvements to the risk analysis process for industrial estates.

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<sup>8</sup> For example, a documented environmental management system (EMS) and a good compliance history.

<sup>9</sup> For example, environmental protection orders and penalty infringement notices issued.

<sup>10</sup> The draft policy has been released for public consultation, which closes on 26 February 2010.

## 5. Key findings and recommendations

This section of the report sets out the key findings of the program and makes recommendations in relation to the environmental regulation of industrial activity in the future. Note: these key findings and recommendations are detailed in Section 1 and repeated here as a reiteration following the body of the report.

### 5.1 Compliance strategy and planning

Key finding:

KF1 The program involved an assessment of 57 industrial estates comprising 3,261 sites. Only 0.25 per cent (eight) of the sites were assessed as presenting a high or very high environmental risk, and these sites were located across six industrial estates. None of those industrial estates hosted more than two sites assessed as presenting a high or very high environmental risk.

Recommendations:

Rec 1 DERM should further develop its risk assessment processes and tools, so that the annual compliance program or plan is targeted at those activities that pose the highest risk to the environment.

Status: In 2008, DERM introduced a new risk assessment guide containing an improved set of risk assessment processes and tools (see Appendix 2). The risk assessment guide is used to inform inspection prioritisation and for use in compliance projects identified under annual compliance plans. The processes and tools contained in the guide are continually being refined to ensure compliance efforts are directed to areas of highest environmental risk.

### 5.2 Further regulatory activity 2010–11

Key finding:

KF2 The program methodology was such that the sites thought (based on preliminary risk assessment) to present high or very high risk were initially identified for inspection in 2006–07. The adequacy of the development conditions was not included in the scope of the project.

Recommendation:

Rec 2 The eight sites identified as presenting a high or very high risk should be the subject of a specific compliance project in 2010–11 to review the performance of, and the regulatory requirements for, these sites, including the adequacy of development approval conditions.

Status: A strategic compliance project to review the performance and development approval conditions of the eight sites identified as high or very high risk is being implemented in 2010–11.

### 5.3 Good performers

Key finding:

KF3 The program focused on identifying non-compliance, rather than good performance; however, it is important to identify and recognise good performance where it occurs so that it can be acknowledged and leveraged to encourage good performance by other industries.

Recommendation:

Rec 3 DERM's compliance strategy should incorporate the identification and acknowledgement of good performance within industrial estates, and use those examples to encourage 'beyond compliance' performance.

Status: DERM compliance teams will work more closely with DERM's EcoBiz team to encourage compliant industrial sites to progress beyond compliance.

## 5.4 Environmental harm including nuisance

### Key finding:

KF4 Analysis of complaint data during the program indicated that many environmental nuisance issues (assessed as lower risk through risk assessment tools) may be a result of residential encroachment on land used for industrial purposes.

### Recommendation:

Rec 4 A state planning policy containing a specific development assessment code for sensitive land uses should be developed and implemented. This will ensure that there is adequate planning in development assessment decision making and, where necessary, separation of sensitive land uses from industry (including high impact and noxious and hazardous industries) to protect environmental values, including human health and wellbeing, from environmental harm and to protect human safety. This is particularly in relation to events involving fugitive emissions, loss of process control or containment, or fire.

Rec 5 A state planning policy should be developed to ensure that future local planning instruments provide for the separation of land zoned for industry (including high impact industries and noxious and hazardous industries) from land zoned for sensitive uses, and that the policy outcomes of the state planning policy are reflected in regional plans and local planning instruments.

Status: DERM released a draft State Planning Policy – Air, Noise and Hazardous Materials (SPP) that addresses the planning and development assessment issues identified in the report for public consultation from 12 December 2009 to 26 February 2010. DERM, the Department of Infrastructure and Planning (DIP) and the Department of Justice and Attorney General (Hazardous Industries and Chemical Branch within Workplace Health and Safety Queensland) have analysed submissions and met with a number of key-stakeholders to respond to issues and concerns raised. The Minister for Infrastructure and Planning will consider the redrafted SPP and decide whether to adopt the final SPP. Should the SPP be adopted, it is expected to commence at the end of 2010.

## 5.5 Unlicensed activities

### Key finding

KF5 Unapproved ERAs were being carried out 113 (or 3.5 per cent) of the 3,261 sites. Local government regulated 111 of these unapproved ERAs. As local government were collaborators in the industrial estates inspections, action may already have been taken to ensure that these activities are brought within the requirements of the *Environmental Protection Act 1994*.

### Recommendation:

Rec 6 DERM writes to individual local governments about the importance of ensuring that sites involving ERAs that are devolved to them are properly authorised and regularly inspected for compliance. Local government compliance programs should include activities to ensure that land uses on industrial estates are approved<sup>11</sup>.

Status: Chief Executive Officers from all Local Governments have been informed of the report findings, and in particular, it was emphasised that it is important that sites involving ERAs that are devolved to local governments are properly authorised and regularly inspected for compliance.

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<sup>11</sup> This relates to lawful land uses, as opposed to other regulatory obligations of operators.

## Appendix 1 – Acronyms

AES	Aggregate environmental score
API	Accelerated Planning Initiative
DERM	Department of Environment and Resource Management
DIP	Department of Infrastructure and Planning
DSDT	Department of State Development and Trade
EE	Environmental evaluation
EMS	Environmental management system
EPO	Environmental Protection Policy
ERA	Environmentally relevant activity
LGAQ	Local Government Association of Queensland
NPI	National Pollutant Inventory
PIN	Penalty infringement notice
SPP	State Planning Policy
TEP	Transitional environmental plan
TSDA	Townsville state development area

## Appendix 2 – Risk analysis developed during the statewide Review of Queensland Industrial Estates

The following risk assessment guideline was developed with the aim to minimise subjectivity between officers undertaking the risk assessments. This more detailed approach is based on the risk management guidelines as companion to AS/NZS 4360:2004 section 6.

Site risk = hazard (consequence) x exposure (likelihood)

### Steps in risk assessment:

- Identify potential hazards to human or ecological health as a result of the business or activity.
- Identify the type of activity, the characteristics of the activity, and the performance of the operator—input into likelihood matrix.
- Consider the types and quantities of emissions from a site, controls in place, sensitivity of the receiving environment, nature and type of surrounding land uses—input into consequence matrix.
- Analyse the risk by combining the results from the likelihood matrix and consequence matrix in the environmental risk matrix.
- Determine the inspection level and frequency depending on the environmental risk.
- Aggregate environmental score—based on emissions profiling and industry type.
- NPI risk score—based on emissions information from sites reporting to the NPI and includes a proximity factor to population density.
- Surrounding environmental values—biodiversity and planning assessment and wetland info data (in South East Queensland use referable wetland data and drainage lines).
- Client performance—based on Ecotrack information (complaints and compliance history).

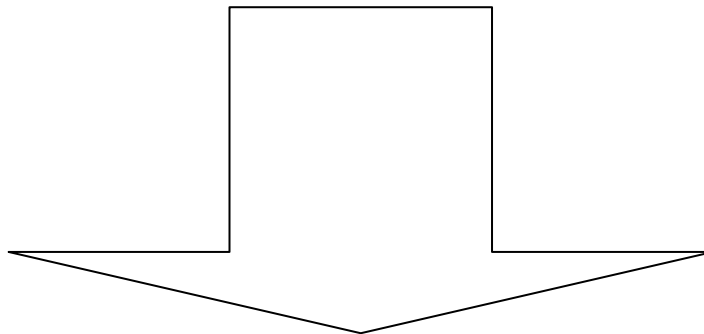
## Step A

### Likelihood matrix (based on client performance and client activity)

Client activity definitions					
Client performance	Non-ERA (known)	Non-ERA (unknown) or aggregate environmental Score (0–25)	Aggregate environmental Score (26–50)	Aggregate environmental Score (51–125)	Aggregate environmental Score (126–325)
Unknown	Possible	Possible	Likely	Almost certain	Almost certain
Poor	Unlikely	Possible	Possible	Likely	Almost certain
Moderate	Rare	Unlikely	Possible	Likely	Likely
Good	Rare	Rare	Unlikely	Possible	Likely
Very good	Rare	Rare	Unlikely	Possible	Possible

### Likelihood – Client performance descriptors

	Client performance
Unknown	No inspections logged in Ecotrack = site performance unknown
Poor	Serious environment harm or major non-compliance; OR
	Material environment harm or repeated minor non-compliance.
	For example, PIN, EPO, TEP, EE issued.
Moderate	Evidence of environmental nuisance or minor non-compliance.
	For example, warning notice or letter issued.
Good	Inspection conducted and site compliant.
Very good	Inspection conducted and site compliant evidence of best practice (EMS, staff training).



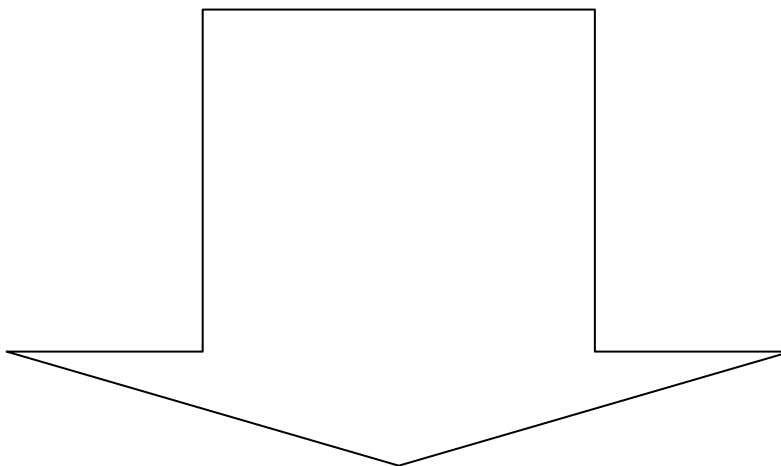
## Step B

### Consequence matrix (based on environment type and client activity)

Client activity risk					
Predominant surrounding environment type	Non-NPI site (no emissions or emissions known) risk score 1	NPI risk score 2	NPI risk score 3	NPI risk score 4	Non – NPI site (emissions unknown) and NPI risk score 5
Highly significant value	Severe	Severe	Major	Catastrophic	Catastrophic
Significant value	Minor	Severe	Severe	Major	Catastrophic
Moderate value	Insignificant	Minor	Severe	Major	Major
Low value	Insignificant	Insignificant	Minor	Severe	Major
Very low value	Insignificant	Insignificant	Minor	Severe	Severe

**Consequence – Environment type**

	<b>Predominant surrounding land use (environment type)</b>
Highly significant	Site located within 100 metres of a drainage line or a referrable wetland, and within 100 metres of an area mapped as state or regional significance in the biodiversity planning assessment.
Significant value	Site located within 100 metres of a drainage line or a referrable wetland, or within 100 metres of an area mapped as state or regional significance in the biodiversity planning assessment.
Moderate value	Site located between 100 metres and 200 metres from a drainage line or a referrable wetland, or between 100 metres and 200 metres from an area mapped as state or regional significance in the biodiversity planning assessment.
Low value	Site located between 200 metres and 500 metres from a drainage line or a referrable wetland, or between 200 metres and 500 metres from an area mapped as state or regional significance in the biodiversity planning assessment.
Very low value	Site located greater than 500 metres from a drainage line or a referrable wetland, or greater than 500 metres from an area mapped as state or regional significance in the biodiversity planning assessment.



**Step C****Environmental risk matrix (ERA and non-ERA industry or business activities)**

		Consequence				
		Insignificant	Minor	Severe	Major	Catastrophic
<b>Likelihood</b>	<b>Almost certain</b>	3 / Moderate	3 / Moderate	4 / High	5 / Very high	5 / Very high
	<b>Likely</b>	2 / Low	3 / Moderate	3 / Moderate	4 / High	5 / Very high
	<b>Possible</b>	1 / Very low	2 / Low	3 / Moderate	4 / High	4 / High
	<b>Unlikely</b>	1 / Very low	1 / Very low	2 / Low	3 / Moderate	4 / High
	<b>Rare</b>	1 / Very low	1 / Very low	2 / Low	3 / Moderate	3 / Moderate

## Appendix 3 – Summaries of estates with high or very high risk sites

### Narangba Industrial Estate – Narangba

- There are 86 sites in the Narangba Industrial Estate located in two distinct precincts, separated by the Bruce Highway. There are no activities of substantial risk in Precinct 1, located west of the Bruce Highway.
- There is one high risk activity in Precinct 2 on the estate – this involves chemical manufacturing.
- Residential development is within 50–100 metres of the industrial estate. A state school is within 250 to 500 metres of the industrial estate.
- A small unnamed creek runs through the estate and is a tributary to Saltwater Creek, which eventually drains via Hays Inlet into Moreton Bay. The unnamed creek was directly impacted by the Binary fire in 2005 and the Zelam fire in 2006. A portion of the unnamed creek is currently subject to a DERM remediation project.

### Yabulu Industrial Area – Townsville

- There are two sites in the Yabulu Industrial Area.
- An activity at one site is assessed as very high risk – a nickel refinery.
- Residential communities of Yabulu, Purono Park and Saunders Beach are located 1–3 kilometres from these sites. There has been a history of odour and dust complaints from these residential areas.
- The Yabulu Industrial Area is located along the coast line and any stormwater runoff from the catchment area drains via a series of creeks and swale ecosystems into Halifax Bay.

### Townsville State Development Area –Townsville

- There are eight sites in the Townsville State Development Area (TSDA).
- Activities at two sites were assessed as very high risk. These very high risk activities include:
  - copper metal refinery
  - zinc metal refinery.
- Residential areas of Wulguru and Cluden adjoin the north and west boundaries of the TSDA; limited buffers zones exist.
- Community groups have strongly opposed the establishment of the TSDA and its further development with heavy industry. These concerns mainly relate to perceived health impacts from air emissions.
- Stormwater from the TSDA drains into Cleveland Bay via creeks including Stuart Creek, Vantassel Creek and Sand Fly Creek.

### Gibson Island

- There are a total of seven industrial operations at Gibson Island, two of which were rated as high risk. These high risk activities included:
  - production of ammonia and urea fertilisers.
  - pulp or paper manufacturing.
- Some other obvious features of interest surrounding the Gibson Island industrial estate are as follows:
  - Hemmant is the closest suburban or residential area and is approximately 500 m south-east of the estate and is separated from Gibson Island by Aquarium Passage.
  - Wynnum West is the next closest suburb, less than 2 km directly east of the estate.
  - Brisbane airport is on the opposite side of the Brisbane River to the west.
  - Eagle Farm industrial estate is located on the opposite side of the Brisbane River, approximately south-west. DERM has an air quality and weather monitoring station located at Eagle Farm industrial estate. The data is used to predict or forecast air quality for the South East Queensland region.

## **Bowen**

- The features of interest surrounding Bowen include:
  - location within 2 km from Bowen central business district (CBD)
  - sensitive receptors – 2 km from Bowen CBD with residents to the east
  - location in and adjacent to the inter tidal zone
  - surrounding land use has significant value
  - drainage – stormwater from the estate drains into the inter tidal areas nearby.
- There is one very high risk activity on site, which is a coke manufacturer.

## **Ernest Junction (Gold Coast)**

- There are 330 industrial sites in the Ernest Junction Industrial Estate, predominantly small businesses.
- One site was assessed as high risk – a chemical manufacturer.
- There is a narrow buffer zone between the industrial estate and residential areas that fringe most of the estate. The nearest residence is within 20 metres of industrial activities.
- Despite the narrow buffer zone, DERM recorded only six complaints about industrial activities from neighbouring residents during 2005–08, all of which were noise related.
- The estate has a closed drainage system with no rivers, creeks or canals subject to discharge. All stormwater is directed to a small wetland to the east of the estate.