

SEPTEMBER 2019

SUMMARY REPORT

Results of the Edith Cowan University survey: LOCAL GOVERNMENTS' RESPONSE TO SEDIMENT LOSS FROM BUILDING SITES



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ACKNOWLEDGEMENTS

This report details the results of the Edith Cowan University/Sediment Task Force survey of Local Government Officers in Perth, WA. It also offers recommendations to Local Government Authorities to urgently put into place (or more effectively implement) policies, processes, procedures and tools that focus on risk management to enhance their capacity to effectively manage this significant ecological and environmental issue.

The Sediment Task Force would like to thank Ms Sharron Glasgow (Curtain University) for her time and efforts in developing the survey, and all survey respondents for their participation.

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EXECUTIVE SUMMARY

Soil erosion, sediment runoff and sand drift during urban land development is resulting in sedimentation of Western Australia's waterways, which has detrimental impacts on water quality, hydrology and biological functioning, and biodiversity (including reducing recreational fishing assets and increasing mosquito populations). Sedimentation results in increased water temperatures, decreased oxygen levels, increased incidence of pathogens and a decrease in the number of natural predators, as well as aquatic weed infestations.

Sediment runoff and sand drift from subdivision, building and construction sites can block or damage drainage infrastructure, including Water Sensitive Urban Design (WSUD) infrastructure, causing localised flooding. Public health, safety, amenity, recreational and cultural values are also compromised.

Preventing and controlling sediment loss resulting from urban development is a significant issue for Local Government Authorities (LGAs) across Australia. Effective legislation and regulation for soil erosion and sediment control from building, subdivision and construction sites is essential, and requires successful adoption and implementation.

In Western Australia (WA), sediment discharge is not generally regulated by the State Government. Local Government has the opportunity and responsibility to regulate sediment management through Local Laws, policies, guidelines, planning approvals and management plans.

Inconsistencies in Local Laws and their enforcement between LGAs in WA has led to confusion and poor soil erosion and sediment control practices, resulting in high costs in unbudgeted remediation being borne by the community and detrimental impacts on the environment.

During 2017, the Sediment Task Force engaged Ms Sharron Glasgow, an Honours student from Edith Cowan University, to undertake a survey to evaluate the effectiveness of LGA's Local Laws in dealing with sediment loss from building sites. A total of 33 Local Government Officers (LGOs) from 14*¹ LGAs across Perth participated in the survey, resulting in 41% of LGAs being represented. This sample was diverse and captured the many departments within LGAs that work to mitigate and manage sediment loss from subdivision, building sites and road construction within their operational jurisdiction.

This Summary Report details the results of this survey and offers recommendations to Local Government Authorities to urgently put into place (or more effectively implement) policies, processes, procedures and tools that focus on risk management to enhance their capacity to effectively manage this significant ecological and environmental issue.

The survey results demonstrate that the environmental and financial impacts of sediment loss resulting from urban development are considerable and are managed by LGAs across Perth in a diversity of ways, to varying levels of success. Specifically:

- 70% of LGOs consider sediment loss from building sites is an issue for their LGA;
- 33% of LGOs believe their LGA's Local Laws are ineffective in preventing erosion and sediment loss;
- 61% of LGOs are either unaware or unsure of the existence of their LGA's Local Law for sediment loss;

¹ Six responses were anonymous, so the views of LGOs from unidentified LGAs may be represented.

- Local Laws are not being utilised due to a lack of ownership by various LGA departments;
- Many LGOs do not believe their LGA's compliance process is effective; and
- Many LGOs believe there is a great reliance on responding to complaints (100%) and LGO observance (67%) due to lack of resources for monitoring and enforcement.

The survey results provide information that confirms that LGAs can expend large amounts of time and unbudgeted expenditure "cleaning up" sediment that has left subdivision, building and construction sites (including road construction) as a result of inadequate preventative erosion and sediment control mechanisms.

They also identify that existing Local Laws in WA for managing erosion and sediment control (ESC) are many and wide-ranging. They relate to soil erosion, sediment, sand drift, environment, health, private property, public thoroughfare, dust, liquid waste and nuisance management, and that Local Laws specific to erosion and sediment control are proving more effective.

This Summary Report includes the following key recommendations:

1. That LGAs undertake a review of their policies, work procedures, compliance mechanisms and field-based training needs. This should include:
 - reviewing Local Law specifications and fines and development approval conditions;
 - a self-audit of their capability to effectively manage ESC;
 - determining if there is sufficient resourcing for proactive monitoring of sites for compliance;
 - determining their effectiveness in information dissemination and education; and
 - identifying key barriers to successful management of ESC and adopting new strategies.
2. That LGAs ensure they have effective processes in place so they can be confident in their knowledge of the scale of sediment loss and, therefore, the level of resourcing required to effectively manage sediment loss resulting from urban development. This includes LGAs planning and building approval departments having the required understanding of sediment prevention and control strategies, and knowledge of sediment control tools and mechanisms. Departments for engineering, environment, enforcement and compliance, and health and safety should also have knowledge of sediment prevention and control strategies. A centralised incident reporting system is recommended to help enable LGAs to assess collective impacts (including downstream impacts).
3. That LGOs who are involved in approving subdivision and building construction approval and/or in managing or reporting sediment loss from building sites are well aware of the intent and conditions of their Local Law and their responsibilities for implementing the Local Law. Furthermore, that all LGOs who are in a position to observe potential breaches have the information, skills and authority to report incidents. LGAs should also encourage land developers and builders to take responsibility for their actions through voluntary reporting.
4. That LGAs determine if their infringement penalties are effective in terms of acting as a deterrent to change land developer and builder behaviours to prevent erosion and sediment loss at the outset, and in terms of recovering the cost of monitoring for and enforcing non-compliance.
5. That LGAs consider gazetting a specific Erosion and Sediment Control Local Law to enhance the efficacy of their management of this issue. It is anticipated this could increase compliance and facilitate effective implementation of the conditions of the Local Law.

INTRODUCTION

Pollutants such as soil, sand, silt and mud (sediment) and cement can be blown or washed away from building and construction sites. Appropriate erosion and sediment controls should be used on road work sites and residential, commercial and industrial developments. When appropriate erosion controls are not used, sediment travels through the stormwater drainage system and can pollute local parks and sensitive environments such as rivers, wetlands and oceans. Sediment can also block and/or damage drainage infrastructure, including Water Sensitive Urban Design infrastructure (WSUD), which can cause localised flooding.

Specifically, soil erosion, sediment runoff and sand drift from urban development is resulting in sedimentation of WA's waterways, which has detrimental impacts on water quality, hydrology and biological functioning, and biodiversity (including reducing recreational fishing assets and increasing mosquito populations). Sedimentation results in increased water temperatures, decreased oxygen levels, increased incidence of pathogens, and a decrease in the number of natural predators, as well as aquatic weed infestations. Public health, safety, amenity, recreational and cultural values are also compromised.

Local Government has the opportunity and responsibility to regulate sediment management through Local Laws, policies, guidelines, planning approvals and management plans to protect the environment, stormwater infrastructure, public health, cultural and recreational assets and amenity.

Local Laws are a significant tool for managing compliance in regard to the prevention of erosion, sediment loss, sand drift and dust during subdivision, building and road construction. Existing Local Laws that are used by Local Governments in WA relate to soil erosion, sediment and sand drift, environment, health, private property, public thoroughfare, dust, liquid waste and nuisance management.

State Government legislative provisions of the *Environmental Protection (Unauthorised Discharges) Regulations 2004* and the *Planning and Development Act WA 2005* are also utilised by Local Governments in Western Australia to manage soil erosion, sediment runoff, sand drift and dust from building, subdivision and construction sites.

BACKGROUND TO THE LOCAL GOVERNMENTS' RESPONSE TO SEDIMENT LOSS FROM BUILDING SITES SURVEY

During 2017, the Sediment Task Force engaged Ms Sharron Glasgow, an Honours student from Edith Cowan University, to undertake a collaborative research project on behalf of the Sediment Task Force. The survey referred to in this report was undertaken as one of the mechanisms to evaluate the effectiveness of LGAs' Local Laws in dealing with sediment loss from building sites. Survey questions were developed by the student with the assistance of Task Force members.

All LGAs within the Perth region were formally invited to participate in the survey, which ran from June to December 2017. The survey was also promoted by The Western Australian Local Government Authority (WALGA) via *EnviroNews*, by Perth NRM via Perth NRM's newsletter, and by Sediment Task Force members.

A total of 33 LGOs from 14*² LGAs across Perth participated in the survey, resulting in 41% of LGAs being represented. The Honours student withdrew her project in November 2017, and an analysis of the survey results was not completed at this time. Subsequent funding secured from the Department of Biodiversity, Conservation and Attractions (DBCA) has enabled an analysis of this survey and other work to be undertaken.

It is anticipated that the sharing of these survey results will provide information that will be useful to LGAs in Perth as they continue to work towards achieving best practice environmental management by mitigating or minimising erosion and sediment loss from subdivision, construction and building sites within their operational jurisdiction.

As a direct result of this survey, a case study series titled *Examples of Local Government's response to erosion resulting from urban development in WA* has been developed by the Sediment Task Force. The case study examples are intended to raise awareness, inform, educate and inspire LGAs to trial and/or implement new tools and mechanisms to more effectively manage sediment loss from building sites. Visit <https://www.perthnrm.com/programs/living-landscapes/sediment-management/local-government-case-studies>

LIMITATIONS OF THE SURVEY METHODOLOGY

It is acknowledged that this survey, like all surveys, has limitations. This will include - but not be limited to - the representativeness of the sample (i.e. recruiting a diversity of participants from the target population), lack of conscientious responses, differences in understanding and interpretation, difficulty in analysing questions, a dependence on survey participants providing accurate and honest responses and the possibility of hidden agendas.

Specific limitations for this survey also include:

1. Some respondents will have direct responsibility for managing sediment loss from building sites whilst other respondents will have lesser awareness of the issue(s) surrounding or involvement in managing this issue. For example, in a small number of cases, Councillors completed the survey, rather than LGOs. As sediment management is not a key responsibility of a Councillor, it is assumed that this has impacted on the results.
2. 24% of the survey participants were employed by one LGA, which impacts on the representativeness of the sample.
3. As respondents weren't given a "don't know" option as an answer to all survey questions, it is not possible to determine if questions were skipped because participants didn't know the answer or if they chose not to answer the question. Additionally, participants could only exit the survey upon its completion, and this may have impacted on results due to skipping questions in order to exit the survey.
4. Significantly, the high number of non-responses from survey participants for individual questions has impacted on the capacity for interpretation. In some cases, the low number of responses means that there is a low level of confidence in data captured, and consequently in the

² Six responses were anonymous, so the views of LGOs from unidentified LGAs may be represented.

interpretation of the data.

5. Individual participant's motivation for completing the survey is unknown. An incentive of attending a Perth NRM workshop at no cost was offered to encourage participation, however it is possible this may have been the key motivator in some cases.

As such, it is recommended that the results, recommendations and conclusions outlined in this report are utilised as a guide for discussion between LGA staff responsible for effectively managing sediment loss from building sites, and that clarification is sought where necessary.

SURVEY RESULTS

Section 1 - Is sediment loss from building sites an issue?

Q1 - Consent to participate in the research.

All LGOs consented to participate in the survey.

Q2 - Provision of contact details (optional).

Seventeen LGOs (52%) provided their contact details.

Q3 - Which Local Government Authority (LGA) do you work for?

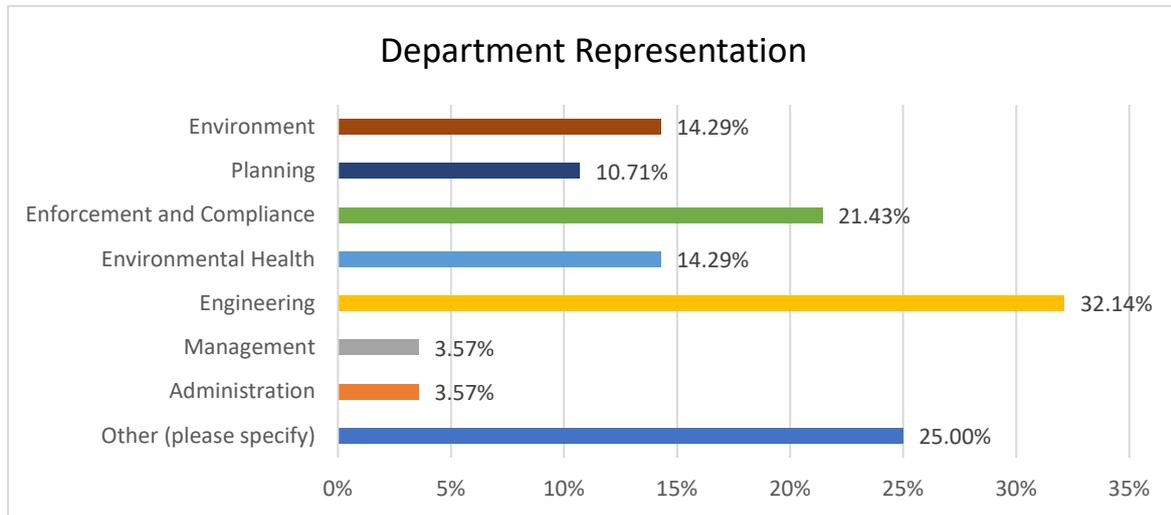
Thirty-three LGOs from 14*³ LGA's across Perth participated in the survey, as follows:

LGA's participating	Number of survey participants
City of Armadale	8
City of Belmont	1
City of Cockburn	1
City of Gosnells	2
City of Joondalup	1
City of Kalamunda	1
City of Nedlands	1
City of Rockingham	3
City of Stirling	3
City of Swan	2
City of Vincent	1
Shire of Toodyay	1
Town of Cambridge	1
Town of Claremont	1

³ Six responses were anonymous, so the views of LGOs from unidentified LGAs may be represented.

Q4 - Which area of your LGA do you work in? (Select all that apply)

Survey participants work in the following areas:



The “Other (please specify)” option (25%) comprised of five LGOs from Building Services/Approvals and two Councillors. Seven respondents skipped this question.

This is a diverse sample that captures the many departments within LGAs that work to mitigate and manage sediment loss from subdivision, construction and building sites within their operational jurisdiction.

Q5 - Do you consider sediment loss from building sites to be an issue in your LGA area?

Twenty-seven respondents answered this question (82%).

70% of respondents consider sediment loss from building sites to be an issue in their LGA area, 19% did not consider sediment loss from building sites to be an issue in their LGA area, and 11% were unsure.

Conclusions:

The majority of respondents consider sediment loss from building sites to be an issue in their LGA area.

Recommendations:

Local Government can expend large amounts of time and money on sweeping roads, repairing and maintaining stormwater management systems, responding to public complaints and remediating or restoring rivers, wetlands and parks. It is therefore recommended that LGAs and LGOs that are involved in addressing sediment loss from building sites urgently put into place (or more effectively implement) policies and processes to manage this significant environmental issue. It is also recommended that LGAs with effective processes in place for managing sediment loss from building sites provide guidance and support to other Perth LGAs on how to manage this issue. WALGA could be a useful advocate in this regard.

Q6 - Why/Why not?

Twenty-three respondents answered this question (70%). The following reasons were provided:

Responses
"When assessing development, we have to look at sediment loss into water courses".
"Sediment is causing issues to neighbouring properties and also council drains".
"For compliance purposes this is a matter that infrequently occurs".
"Uncontrolled losses from developer's sites causes blockages in the stormwater system and requires non-budgeted expenditure. This can lead to flooding issues".
"The level of management of sediment during construction prior to construction of formal drainage swales is minimal. Temporary drainage basins do not trap sediment".
"Mechanical movements from the development site cause sediment to travel across the verge to hard surfaces that then cause nuisance by sand drift water actions and further traffic movements".
"Sediment from cement and plastering is blocking/blinding the bio remediation media in stormwater treatment swales. Sand blocks drains and is washed into water courses and onto landscaped areas and creates hazardous road pavement conditions".
"Sediment from building sites is environmental pollution and may have infrastructure maintenance issues".
"Development areas in the hills consist of clays and rock that do not readily erode. On the foothills the gradients are shallow, and mainly sands and loamy clays. Builders' materials are often high silica content sand which is imported to site".
"All sand and rain soaks in. Any runoff of sand is stopped at first drainage pit. If sand goes any further, it ends up in a sump. The LGA cleans out sumps each year to remove all the other debris that ends up there. The debris is recycled via Capital Recycling or similar".
"Many commercial areas and subdivisions either have a direct or and indirect drainage access to catchment areas in the region".
"Construction Management Plans require measures to be used to screen sites, prevent run-off and dust distribution".
"Builders' sediment should be maintained on the lot".
"The problem is with site sand and/or builders sand entering stormwater systems and becoming sediment".
"Sand is usually washed from building sites during periods of heavy rainfall. Perth has a relatively low rainfall".
"Sediment loss regularly occurs at building sites and becomes a compliance matter for the LGA to resolve".
"Sediment loss from building sites causes downstream issues which can lead to property and road flooding".
"Vast majority of our areas are very sandy, most sand is wind-blown on the roads and pathways and does sometimes end up in our stormwater systems".
"Sites with slopes and exposed soils in evidence".
"Complaints driven by sand drift onto the road and choking swales and other drainage functions".
"After subdivision construction, developers are responsible for maintaining infrastructure for a minimum of 12 months. Sediment should be controlled via practices such as street sweeping. These should be performed on a regular basis but does vary leading to sediment transport into the drainage system".
"The LGA currently has by-laws restricting builders from allowing sand and building material to leave the building site. Building sediment is a nuisance to neighbours and creates problems for nearby lake".

Conclusions:

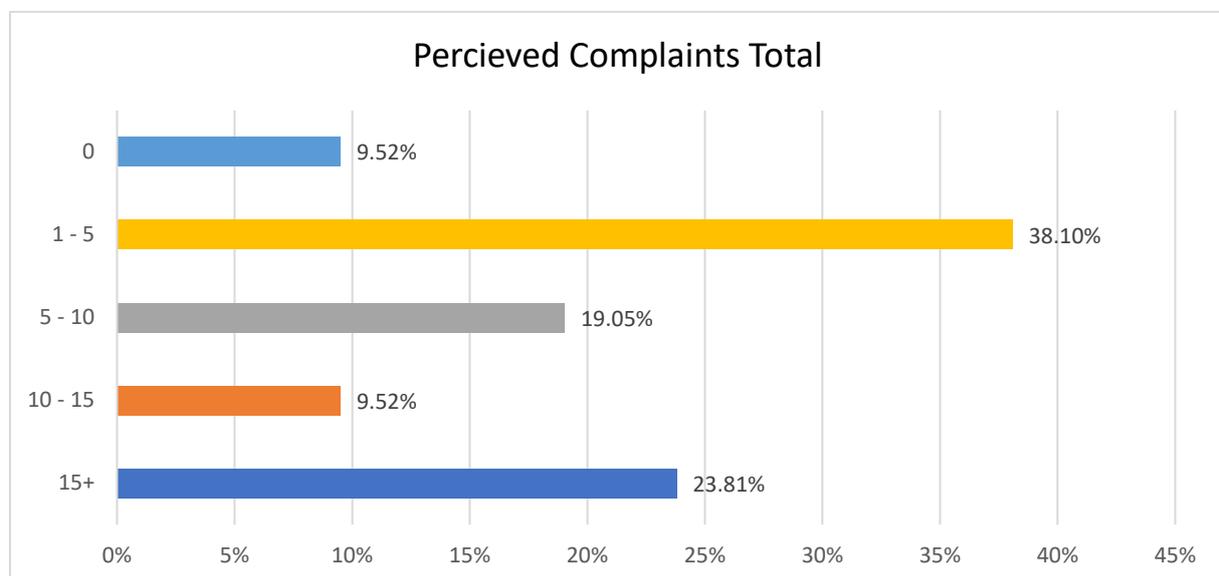
The responses demonstrate that sediment loss from building sites is viewed to have diverse and potentially major impacts on drainage infrastructure (and subsequent council expenditure to remediate/mitigate damage to, or maintenance of, infrastructure), the environment, and health and safety.

Recommendations:

That LGAs and LGOs that are responsible for managing sediment loss from building sites ensure they are aware of the issues experienced within their LGA and accordingly develop a risk management approach to effectively manage sediment control. This will support and expedite the achievement of positive environmental outcomes associated with water quality, air quality and biodiversity, economic outcomes, and community health and safety outcomes (including recreational outcomes).

Q7 - Approximately how many complaints does your LGA receive each year relating to sediment loss from building sites?

Twenty-one respondents answered this question (64%).



The perceived/reported number of complaints for each year relating to sediment loss from building sites is considerable, with 24% of respondents reporting 15 or more complaints and 10% reporting 10-15 complaints. 19% of respondents believe 5-10 complaints are received per annum. 1-5 complaints are the most common response for LGAs within the Perth region (38%).

10% indicated that no complaints were received each year relating to sediment loss from building sites. This (and other responses) may be due to a lack of awareness of how many complaints there are per year, particularly if there is no centralised process for reporting and managing complaints of this nature.

Conclusions:

If it is assumed that 1-5 complaints are average for an LGA, then in 53% of cases the number of complaints received is above average.

It would be useful to determine how many complaints are actually received in the 24% of cases where respondents reported 15 or more complaints.

To demonstrate the significance of this issue, information provided externally to this survey by the City of Cockburn states that 69 complaints relating to dust nuisance from building sites were received by the City in the 2017-18 financial year, with 98 complaints being received during 2016/2017, the majority of sites being vacant blocks. A common complaint is sand being blown onto driveways and gardens, and sand filling gutters and window and door tracks in neighbouring properties. This sand then blows onto the road and travels into drains after rain events, ultimately ending up in wetlands or the ocean.

Recommendations:

That all LGAs accurately determine how many complaints have been lodged so they can be confident in their knowledge of the scale of sediment loss and, therefore, the level of resourcing required to effectively manage sediment loss from building sites.

That all LGOs who are in a position to observe and report sediment loss from building sites in the context of their role ensure all complaints are logged via a centralised process, which is coordinated by one department and/or a key staff member with the required expertise to effectively manage these complaints and assess their collective impact (including downstream impacts). The department/staff member will require clear processes to be in place regarding following up on non-compliance, and the legal authority to issue fines or prosecute.

Q8 - Which of the following are experienced in your LGA as a result of sediment loss from building sites? (List supplied)

Twenty-three respondents answered this question (70%).

Types of Sediment Loss from Building Sites	% experienced
Blocked stormwater entry pits/drains	69.57
Damage to drainage infrastructure	26.09
Increased infrastructure maintenance costs	39.13
Localised flooding	30.43
Altered channel flow of waterways	21.74
Reduced aesthetic value of surrounds	47.83
Sediment smothering reeds, plants and/or seagrasses	26.09
Nutrient enrichment and eutrophication of rivers and wetlands	21.74
Harm to fish and other aquatic life	13.04
Dust nuisance	78.26
Other (please specify)	21.74

‘Other (please specify)’ category responses were:

1. “Slip hazard on paths”.
2. “Blocking bio remediation media in stormwater treatment swales”.
3. “Sedimentation of rivers and their tributaries”.
4. “Sand on the road”.

Conclusions:

It is perceived by respondents that there are diverse and significant impacts resulting from sediment loss from building sites, with the most significant impacts related to (and in order of importance): dust nuisance, reduction in the efficacy of drainage infrastructure and subsequent flooding, impacts on the aesthetic values, the health of the environment and safety.

Recommendations:

That addressing the identified issues in priority order forms the basis of each LGA management/action plan to address sediment loss from building sites.

That a key responsibility for individual LGA's planning and building approvals department is the implementation of sediment prevention and control strategies, and knowledge of sediment control tools and mechanisms. Departments for engineering, environment, enforcement and compliance, and health and safety should also have knowledge of sediment prevention and control strategies.

That a review of policies, work procedures, roles and responsibilities, compliance mechanisms, available resources, audit efficacy and field-based training needs is recommended. Identifying the key barriers to successfully managing erosion and sediment control is essential in this regard.

That an LGA's management team demonstrates leadership in terms of the importance of erosion and sediment control to the organisation and the community, as this is central to success in effectively managing this issue.

That LGAs refer to various audit tools developed for Local Governments to assess efficacy. Examples of audit tools can be found in the [Useful Resources](#) section at the end of this report.

Performance review tools (audits) are being conducted by some Local Governments across Australia to assess the effectiveness of their internal management systems relating to erosion and sediment management. These audits provide the capacity to determine how to achieve their commitment to reduce the impacts of sedimentation on water quality, and to reduce public health and safety risks and costs incurred from cleaning and repairing drainage infrastructure and remediating waterways.

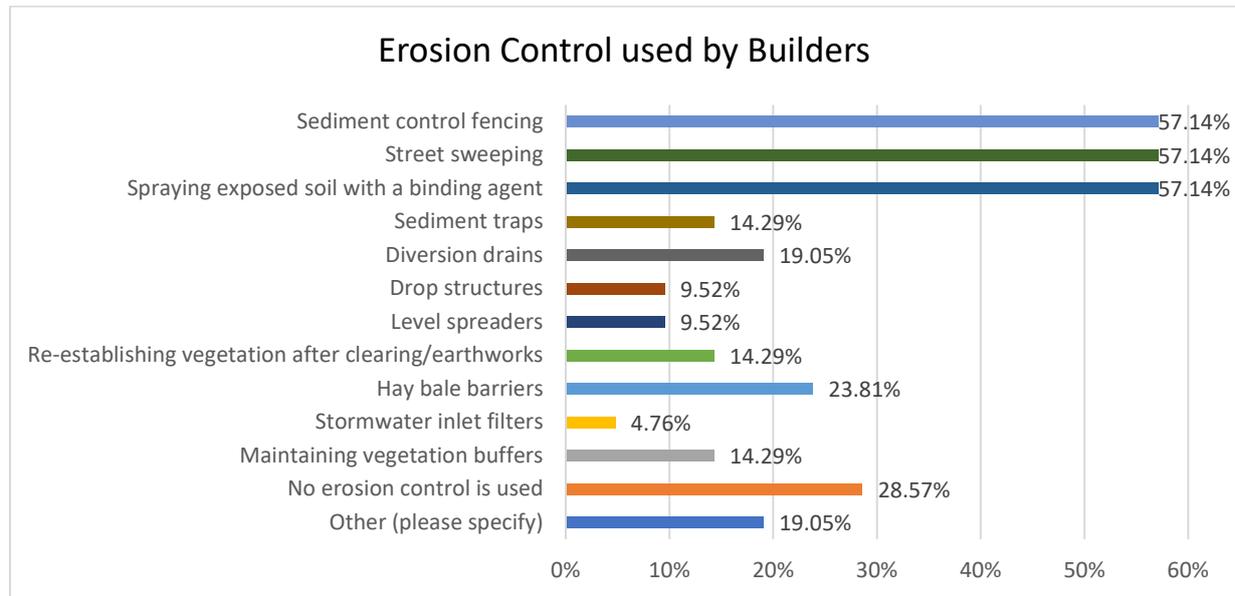
Performance reviews are proving a very valuable tool for both private urban development projects and for Council Infrastructure Projects. An internal performance review can be achieved by Local Government by many methodologies, but it is essential to:

1. Ensure corporate ownership and commitment (high level managerial support);
2. Ensure suitably qualified person/s are involved;
3. Include any relevant internal and external stakeholders and expert consultants, with an option for anonymity;
4. Focus on what is locally relevant and important;
5. Undertake a risk management process, including perceived risks of climate change;
6. Review compliance procedures, planning procedures, reporting procedures, incentives and documentation and ensure they are compliant with and reflect Council policy and best practice standards;
7. Identify and implement education and training needs internally to build staff capacity;
8. Determine where external guidance and advice is required;
9. Consider relevant existing and new technology and innovations;
10. Have adequate resources for site inspection to determine compliance with Local Government ESC Policy; and

11. Ongoing evaluation using internal review results as a baseline for comparison with any future investigations.

Q9 - What type of erosion control is used by builders in your LGA to manage sediment loss from building sites? (select all that are used)

Twenty-one respondents answered this question (64%).



'Other (please specify)' category responses were:

1. "House construction addressed, not subdivision construction".
2. "This is all developer led".
3. "Increased cleaning of drainage pits around building sites".
4. "Shade cloth fencing at front of lot".

Conclusions:

It is perceived by respondents that the most common types of erosion control utilised by developers and builders in the LGAs participating in this survey are sediment control fencing (57%), street sweeping (57%) and spraying exposed soils with a binding agent (57%), with hay bale barriers being utilised in 24% of cases. It is important to note, however, that this may be due to the fact that these four forms of sediment control are more visible to the observer.

Recommendations:

That LGAs communicate to developers, road construction managers and builders that there are many different ESC methods that can be used to prevent soil erosion from occurring and to capture sediment that may runoff from their site. It is important that LGOs responsible for ensuring compliance with Local Laws understand that each site is different and potential risks should be identified in order to determine the ESC methods best suited to prevent sediment loss from an individual building/road construction site from occurring in the first instance.

Moreover, often a single ESC structure or tool, also known as a "treatment" will offer an effective solution and it is the combination of treatments, known as a "treatment train", that will best protect sites over the duration of soil disturbance. A treatment train consists of multiple ESC methods

and/or devices that are each used for a specific purpose, operating in sequence and linked together to improve the control of soil, sand, mud and silt. Short-term control is needed on sites where construction activities are ongoing and short-term protection is needed between site staging. For sites in their final stages of construction (or abandoned sites) long-term erosion control, sand drift and sediment control treatments are needed prior to the establishment of vegetation and eventual site stabilisation.

The perception by 29% of respondents that no erosion control is evident in their LGA area warrants further investigation in order to assess the extent to which this is true, and if so, for the relevant LGAs to address this as a manner of priority.

Section 2 – Local Law

Q10 - Does your LGA have a Local Law to manage the issue of sediment loss from building sites?
Twenty-three respondents answered this question (70%).

39% of survey participants were aware that their LGA has a Local Law to manage the issue of sediment loss from building sites, with 22% being unaware, and 39% being unsure.

Conclusions:

It is of significant concern that 61% of survey participants indicated they are either unaware or unsure of the existence of their LGA's Local Law, which has been specifically gazetted to provide officers with the authority to manage sediment loss from building sites.

Recommendations:

As a highest priority, all LGOs who are involved in approving subdivision and building construction approval and/or in managing or reporting sediment loss from building sites become well versed in the details of their LGA's Local Law, particularly how it may be utilised, the reporting processes that must be followed, and what their responsibility is in regards to the monitoring and enforcement (compliance) of this law.

Q11- If yes, what is the name of the legislation?
Seven respondents answered this question (21%).

Local Laws identified were:

1. *The City of Armadale Consolidated Environment, Animals and Nuisance Local Laws 2002.*
2. *Local Thoroughfare Laws.*
3. *Local Government and Public Property Local Law 2016.*
4. *Dust and Liquid waste Local Law 2007.*
5. *City of Stirling Thoroughfares and Public Places Local Law 2009.*
6. *Local Government Local Law developed to control dust and sand drift from development sites.*
7. *Sand Drift Prevention and Abatement Local Law 2000.*

Conclusions:

As above, it is of significant concern that only seven respondents (21%) could identify the name of their LGA's Local Law.

Recommendations:

As above, all LGOs who are involved in approving subdivision and building construction approval and/or in managing or reporting sediment loss from building sites are aware of the intent and conditions of their Local Law and their responsibilities for implementing the Local Law.

Q12 - Do you think your LGA would benefit from having a Local Law to manage sediment loss from building sites?

Thirteen respondents answered this question (39%).

54% of survey participants thought their LGA would benefit from having a Local Law to manage sediment loss from building sites, with 31% being unaware and 15% being unsure.

Conclusions:

Assuming all LGAs have a Local Law to manage sediment loss/control, a lack of LGO knowledge about the existence of their LGA’s Local Law means 46% of respondents could not answer this question. 54% of respondents however believe their LGA having a Local Law to manage sediment loss from building sites would be beneficial.

Recommendations:

It is recommended that LGAs consider gazetting a *Soil Erosion, Sediment and Sand Drift Local Law*. Advantages include that all building permits can refer to the Local Law as an Advice Note, and a streamlined enforcement process.

In the Town of Claremont’s experience, prior to the introduction of their *Site Erosion and Sand Drift Local Law 2016*, management of sand drift and dust controls required the Town of Claremont to prosecute offenders under the Health Act 1911 and Building Regulations 2012. This proved difficult to show the true impact of the issue and specific authorised officers had to be available to make a determination of what was reasonable and injurious to health. Their *Site Erosion and Sand Drift Local Law* has enabled the Town of Claremont to respond more quickly, including the ability to issue an on-the-spot infringement.

The City of Nedlands can provide a copy of their local law and a template that LGAs can use to draft their own local law, a link to this can be found in [Useful Resources](#).

Q13 – Why/Why not?

Twelve respondents answered this question (36%). Note the below listed responses are verbatim responses.

Responses
Development consistency.
Give some backing for enforcement.
I think it would address a current gap.
This should be a State Law that deals with all development from Mining, Land development through to different types of Building Works. Disposal of Concrete and Cement mortar waste.
Control issues previously mentioned.
We do not have the resources to enforce it.
Development (and building works) are controlled through either development conditions under the Planning Act, or by asset protection bonds (a.k.a. kerb deposits).
Controlled under the Construction Management Plan with good compliance standard.

It would easier to deal with owners/builders to ensure sand is contained within the property boundaries.
Not sure if it is a big issue for my LGA.
Being able to recover the cost of cleaning drainage. Reduce downstream blockages.
To ensure compliance and to encourage Builders to do the right thing.

Conclusions:

There are diverse reasons for why Local Laws are viewed as a beneficial tool for LGAs.

Recommendations:

As above, it is recommended that LGAs consider gazetting a specific *Erosion, Sediment and Sand Drift Local Law* to enhance the efficacy of their management of this issue.

Q14 - Does your LGA's Local Law deal with the issue of sediment loss by using a 'nuisance' type provision?

Nine respondents answered this question (27%).

67% of survey participants thought their LGA's Local Law dealt with the issue of sediment loss by using a 'nuisance' type provision, with 33% being unsure.

Conclusions:

A lack of knowledge about the existence of their LGA's Local Law could mean that only nine respondents chose to answer this question. Of these nine LGOs, the majority believe that their LGA's Local Law deals with the issue of sediment loss by using a 'nuisance' type provision. It can be assumed that this approach is a common method for LGAs in Perth to address sediment control.

Recommendations:

Whilst dust nuisance is a visible impact that is easy to report, sediment loss from building sites that does not have a visual impact is evident by damage to drainage infrastructure, sedimentation of waterways, localised flooding and road safety.

Local Laws should address all impacts of erosion and sediment loss from building sites.

Q15 - If yes, how is nuisance established?

Six respondents answered this question (18%). Note the below listed responses are verbatim responses.

Responses
By visual impact.
Sand on the road or in drain and obvious erosion from site.
Site visit following complaint.
We also have local laws that control sand drift and dust control on development sites.
When a complaint is received.
By the Health Officer.

Conclusions:

Responses demonstrate there are two key mechanisms in place for LGOs to establish nuisance; namely by visual impact or through a site inspection following a complaint.

Recommendations:

LGAs should pursue additional ways of determining/reporting nuisance; for example:

- regular drive by checks by all LGOs employed by the LGA;
- regular assessment against conditions of planning permits or sediment control plans (i.e. random checks);
- responding to localised flooding;
- regular assessment of damage to drainage infrastructure;
- observable and tested environmental impacts (for example, build-up of sediment in waterways, observed or measured turbidity or measured Total Suspended Solids); and
- financial analysis of expenditure on street sweeping and the removal of sediment from drainage infrastructure.

Q16 - Do you think there is benefit in having consistent legislation across all LGAs with regards to managing sediment loss from building sites?

Nine respondents answered this question (27%).

Conclusions:

All respondents believe there is benefit in having consistent legislation across all LGAs with regards to managing sediment loss from building sites.

Recommendations:

LGAs advocate for consistent legislation across all Perth LGAs with regards to managing sediment loss from building sites.

The Sediment Task Force has liaised with builders and discovered that a consistent local law regarding sediment control from building sites is something that the builders support and desire. Differing local laws and requirements across LGAs cause confusion for builders and sub-contractors. This will also mean LGOs who work in, or over time for, different LGAs will not be required to learn/understand a new Local Law.

Q17 - Why / why not?

Six respondents answered this question (18%). Note the below listed responses are verbatim responses.

Responses
Consistency.
They all have the same issues.
Because currently there are different rules for different LGAs.
This will be useful as all builders, contractors and developers will know what is expected of them when developing sites.
Ease of implementation and prosecution if every is applying the same requirements.
Better compliance from builders who can expect this condition to apply.

Conclusions:

100% of respondents believe there is benefit in having consistent legislation across all LGAs with regards to managing sediment loss from building sites. They believe consistency will reduce sediment loss because builders, contractors and developers will understand what is expected in terms of sediment mitigation and control. This will increase compliance and facilitate effective implementation of the conditions of the Local Law, and subsequent prosecution processes if required.

Recommendations:

As above, LGAs should advocate for consistent legislation across all LGAs with regards to managing sediment loss from building sites as a consistent approach will benefit LGAs, the building industry and the health of the environment.

Q18 - Do you think your LGA's Local Law is effective in preventing/managing sediment loss from building sites?

Nine respondents answered this question (27%).

67% of respondents who were aware of their LGA's Local Law believe it is effective in preventing and/or managing sediment loss from building sites, with 11% believing it is not effective and 22% being unsure.

Conclusions:

One third of respondents believe their Local Laws are ineffective in preventing and/or managing sediment loss from building sites.

Recommendations:

Individual LGAs should assess the effectiveness of their Local Law to identify where improvements can be made. This should include assessing the effectiveness of LGOs in communicating the work being undertaken to manage sediment loss from building sites and how effectively required actions for compliance are adhered to, including development approvals.

Q19 - Why / why not?

Seven respondents answered this question (21%). Note the below listed responses are verbatim responses.

Responses
Attend to all complaints.
Yes, as contains penalties.
It can be because our local laws enable us to issue a verge permit with conditions to adhere to. If they don't adhere to them we can issue an infringement notice and if they don't make good we can use a security bond we hold from them to pay for remedial costs.
We apply a Notice to all development sites requiring them to have a dust management plan. We enforce these plans quite stringently.
Continuous sand-drift concerns are raised during construction however cannot be generally controlled if tradespeople are onsite.
For whatever reason the local law isn't actively used.
Recent.

Conclusions:

As above, there is a diversity of opinions as to whether individual LGAs Local Laws are effectively preventing/managing sediment loss from building sites.

Recommendations:

That individual LGAs assess the effectiveness of their own Local Law in dealing with this issue. As per above, self-assessment tools have been developed for LGAs, and consideration of introducing a Local Law that deals with erosion, sediment and sand drift is recommended.

Q20 - Do you have any suggestions for how your LGA's Local Law could be improved?

Nine respondents answered this question (27%).

One respondent had a suggestion for how their LGA's Local Law could be improved, namely: "Developers should notify new owners to maintain sand stabilisation to lots when sold (when the stabilising agent they have used wears off)".

Conclusions:

With 89% of respondents having no suggestions for improvement to their Local Law, an evident lack of awareness that the Local Law exists, and the potential that the Local Law is also not well understood, the responses to this question can provide limited insight.

Recommendations:

As LGAs depend on their Local Laws as a key mechanism for controlling sediment loss from building sites, it is recommended that LGAs ensure LGOs are aware of the Local Law(s) relating to erosion, sediment loss, sand drift, dust control, stormwater pollution, environmental protection and health and safety, and fully understand their role in enacting/enforcing these Local Law(s).

It is further recommended that LGAs seek feedback from the relevant staff on a regular basis to determine areas for improvement (for example, a formal internal review of the Local Law's intent and its implementation).

Section 3 – Compliance and Enforcement

Q21 - What percentage of building sites in your LGA would you estimate are compliant with your LGA's Local Law for managing sediment loss from building sites?

Eight respondents answered this question (24%).

Conclusions:

Whilst only eight responses were provided, the belief that 87% of building sites in their LGA are compliant regarding sediment loss from building sites is encouraging. However, it is important to consider the following:

1. There is a small number of responses, which reduces confidence.
2. As has been demonstrated above, if non-compliance results in actual impacts or complaints only part of the time, the proportion of sites believed to be compliant would be significantly less.

Recommendations:

As demonstrated above, the estimated 13% of non-compliant sites can still have a major impact on drainage infrastructure and the environment. It is important to increase compliance to minimise

environmental impacts and reduce council expenditure on unbudgeted remediation works and the maintenance of infrastructure. Additionally, consistent and effective monitoring in regard to compliance and enforcement of an LGA's Local Law will be necessary to maintain the current perceived level of compliance.

Q22 - Why is that your estimate?

Eight respondents answered this question (24%). Note the below listed responses are verbatim responses.

Reasons for this estimate are:

Responses
Number of complaints received.
Visible evidence on road.
Based on number of complaints received.
Because we track the amount of inspections we conduct and infringements we issue and generally the number of infringement notices being issued are reducing and as well as the amount of money we withhold from bonds is reducing too. The decline in the amount of building work at present could contribute to this decline also.
We actively apply the local laws requiring Builders and developers to control sand and dust from Building and development sites. More so from land clearing activities.
Majority of concerns come from lots close to the coast not generally inland lots.
Probably for by accident 4 in 5 sites don't have an issue and have no need to actually apply the measures in the local law.
Related to the fact that I receive little or no complaint.

Conclusions:

These responses demonstrate that in many cases, effective sediment management is reliant on an effective compliance and enforcement process.

It is obvious from the survey results, however, that many LGOs do not believe their LGA's compliance process is effective. It is likely that the responses above have been provided by LGOs from LGAs that have effective management processes for sediment loss from building sites.

Consistent effective monitoring in regard to compliance and enforcement of each LGAs' Local Law will be necessary to maintain the current perceived level of compliance.

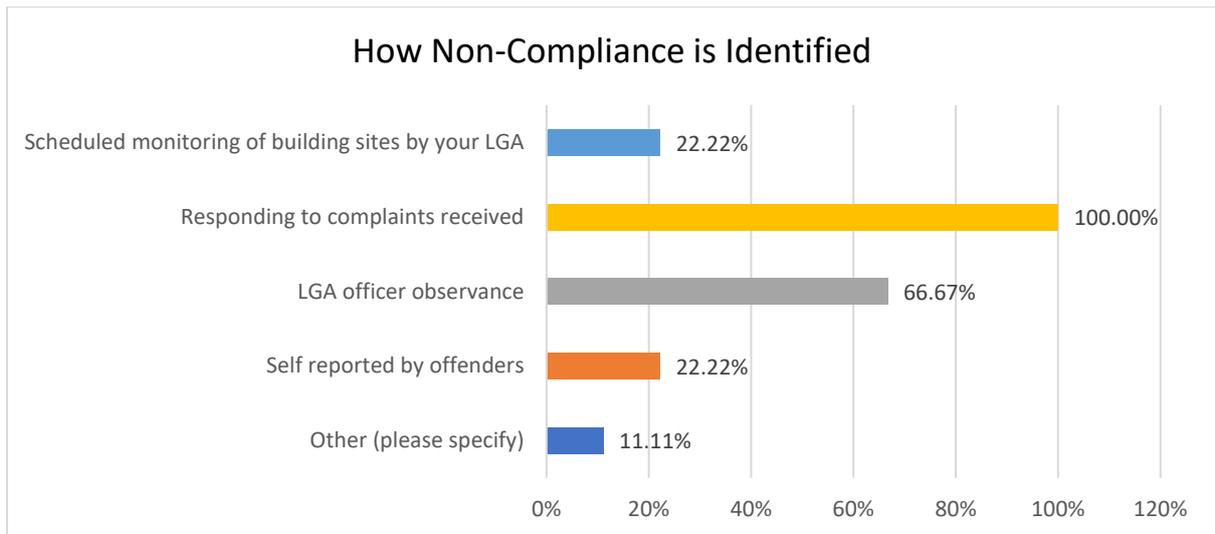
Recommendations:

As above, it is recommended that all LGAs ensure they have effective processes for compliance and enforcement of their Local Law to effectively manage this issue.

Q23 - How is non-compliance with your LGA's Local Law identified?

Nine respondents answered this question (27%).

Responses were:



One respondent stated that their “LGA conducted random, proactive inspections of sites as resources are available”.

Conclusions:

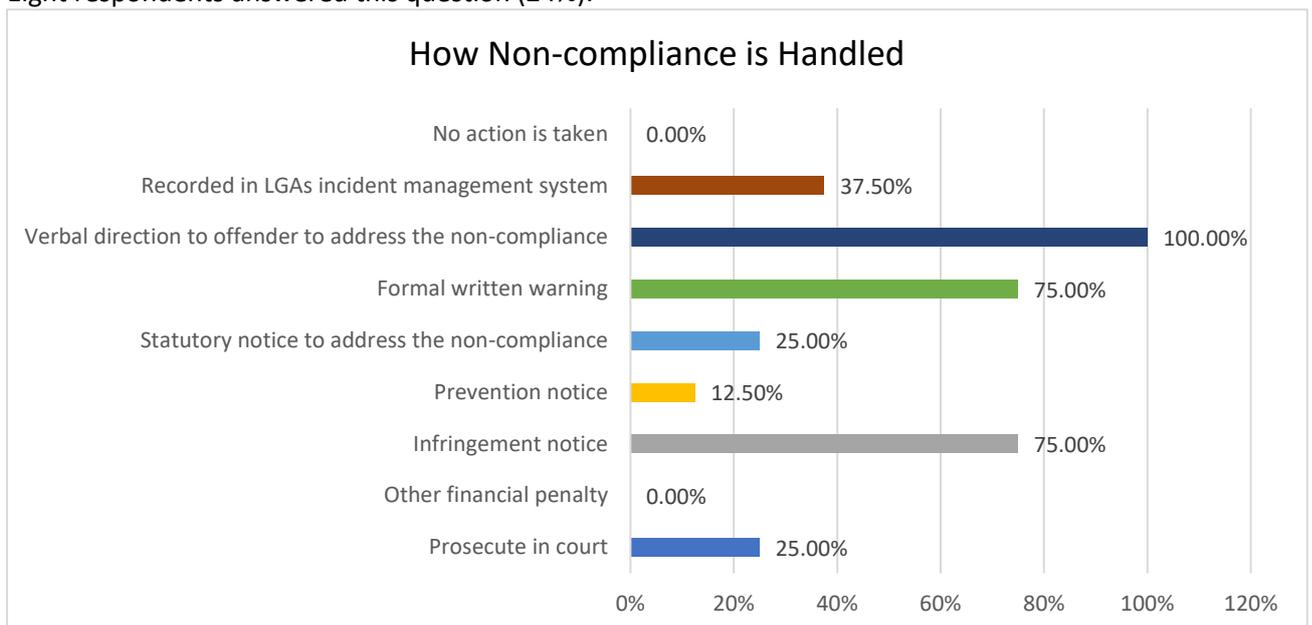
The most common method by which non-compliance with Local Laws is identified is by responding to complaints (100%). LGO observance is also a common method (67%), however this method is not utilised in all cases. Only a small percentage (22%) of LGOs reported undertaking scheduled monitoring of building sites as a tool for assessing compliance. Increased efforts in this area would be most beneficial. Self-reporting by offenders at 22% is believed to a significant tool, however, no data was provided in the survey responses to illustrate and/or substantiate this. An improved understanding of this method of assessment for non-compliance would be advantageous.

Recommendations:

All LGAs should undertake scheduled monitoring of building sites as a tool for assessing compliance. LGAs should encourage builders to take responsibility for their actions through voluntary reporting.

Q24 - How are non-compliances with your LGA's Local Law handled?

Eight respondents answered this question (24%).



In all cases, action is taken to address non-compliance with individual LGAs' Local Law.

The primary tool identified by LGOs for dealing with non-compliance is verbal direction to the offender (used in 100% of cases), followed by issuing either a formal written warning or infringement/prevention notice as the secondary tool for ensuring compliance (used in 88% of cases). Respondents identified that prosecution is a tool that is also utilised by their LGA.

Conclusions:

Of significant concern is that only two LGAs confirmed that non-compliance was recorded in their incident management system. Notably, no participants identified that a financial penalty is applied.

In two cases non-compliance was addressed via legal means, ie statutory notice/prosecution in court. If it is assumed that a written formal notice results in compliance in all other cases, 25% of non-compliance requires formal legal proceedings, even though no financial penalty is applied (for example, fines issued as per Local Law).

Recommendations:

All LGAs ensure that incidents of non-compliance are recorded in their incident management system to ensure non-compliance is addressed by the proponent and to confirm no further action is required by the LGA or the proponent. This also allows for a true record of the number and nature of complaints being addressed and the methods used to manage them, which can allow for a more accurate assessment of the effectiveness of these methods.

Q25 - Does your Local Law include a provision to allow the issuing of infringement notices for offences related to sediment loss from building sites?

Nine respondents answered this question (27%).

78% of respondents believe their Local Law includes a provision to allow the issuing of infringement notices for offences related to sediment loss from building sites. 22% of respondents were unsure.

Conclusions:

LGAs are relying on their Local Law including a provision to allow the issuing of infringement notices for offences related to sediment loss from building sites. Local Laws need to be effective in this regard.

Recommendations:

Ensure all LGOs involved in managing sediment loss and other LGOs that are in a position to observe potential breaches are given the information, skills and authority to report incidences that may lead to an infringement notice being issued.

Q26 - If yes, do you think the fine is sufficient to act as a deterrent to potential offenders?

Eight respondents answered this question (24%).

62.5% of LGOs who responded believe the Local Law fine is sufficient, 12.5% of survey participants believe their LGA's fine is insufficient, and 25% of survey participants are unsure.

Conclusions:

As this question is objective and so few survey participants answered this question, it is hard to draw conclusions. Individual opinion could be based on builders informing the LGO that the fine is an incentive to change their behaviour, or it could be the LGO's personal perspective.

Recommendations:

That LGAs assess the number of instances where non-compliance is repeated, as this will demonstrate that their fine is ineffective as a deterrent. LGAs compare their fines with fines determined by other LGAs in Perth to determine if it is comparable.

It is also recommended that revenue received via non-compliance is used to support effort to monitor and enforce the Local Law.

Q27 - If not, how much do you think the fine needs to be to act as a deterrent to potential offenders?
Two respondents answered this question (100% of participants who believe the fine is not sufficient; 6% of participants overall).

One response indicated that “the fine was restricted by statute”, whilst the other respondent believed “the fine should be a minimum of \$500 for companies”.

Conclusions:

As per above, this question is objective and, as so few survey participants answered this question, it is hard to draw conclusions.

Recommendations:

All LGAs undertake a comparison of fines issued under Local Laws by other LGAs in Perth to determine if their own fine is effective/comparable in terms of acting as a deterrent to change developer and builder behaviours, and in terms of the cost of administering the process of proving addressing non-compliance for cost recovery.

External to this survey, some LGAs have reported that a “sliding scale” of fees is a more effective mechanism for repeat offences, whereby fines increase due to the number of offences. LGAs could investigate if a repeat offence sliding scale is a more effective mechanism and whether there is a need for determining fines based on the level of impact (ie, a low level fine is administered for a low environmental impact offence and a much higher fine administered for a major impact).

Q28 - Does your LGA issue infringement notices for offences related to sediment loss from building sites?

Nine respondents answered this question (27%).

Conclusions:

It is concerning that only 56% of LGOs indicated that their LGA issues infringement notices for offences related to sediment loss from building sites, with 11% believing this was not the case, and 33% of survey participants being unsure. (Note, however, that responses for Question 24 indicated that 75% of respondents believed non-compliance with their LGA's Local Law was handled by the issuing of infringement notices).

Recommendations:

Infringement notices serve as an effective tool to ensure compliance with Local Laws, as an educational tool and as a deterrent, as well as a mechanism to recoup Council costs associated with removing sediment from drainage infrastructure, replacing hay bales and/or street sweeping, and other related management costs. Infringement notices also act as a “guideline” for best practice requirements for the LGA.

It is recommended that LGAs ensure all LGOs that are involved in managing sediment loss and other LGOs in a position to observe potential breaches are given the information, skills and authority to report incidences that may lead to an infringement notice being issued.

Section 4 – Other policy

Q29 - Does your LGA have a policy for managing/responding to sediment loss from building sites?

Twenty-one respondents answered this question (64%).

19% of LGOs who responded indicated their LGA has a policy for managing/responding to sediment loss from building sites, with 48% indicating their LGA did not have a policy for managing/responding to sediment loss from building sites, and 33% being unsure.

Conclusions:

In a large number of cases (81% of responses), either there is no policy to support the Local Law or LGOs involved in managing sediment loss from building sites are unaware of the existence of their internal policy.

Recommendations:

LGAs consider developing an “in-house” policy that acknowledges and supports the Local Law relevant to sediment control. This is especially useful when the Local Law that addresses sediment management is part of a Local Law dealing with sediment management and a number of other issues; for example, an Environmental and Health Local Law.

Q30 - If yes, please provide detail of the policy.

Six respondents answered this question (18%). Note the below listed responses are verbatim responses.

Responses by LGOs who answered this question were:

Responses
Unknown.
Procedures, no Policy. Not a frequent issue and managed informing Builders when notified of non-compliance (rarely an issue).
Building/development Compliance department.
We have a policy that requires developers to determine the level of dust and sand drift potential of each and every development and how they are going to mitigate it through a dust management plan. We also have a moratorium on land clearing on large blocks greater than one hectare during the summer months.
Drive-by of site to ascertain level of sand-drift issue. Correspondence to owner/builder of site (set timeframe to fix). Monitor site – reinspect all timeframe set if stabilised compliant closed. If still a nuisance issue warning (timeframe set). Monitor – if not rectified infringement issued.
Covered under local bylaw.

Conclusions:

One LGA has a specific policy in place, with other LGAs having processes and/or procedures in place to support the Local Law.

Recommendations:

As above, LGAs consider development of an “in-house” policy that acknowledges and supports their Local Law.

Q31 - Does your LGA provide information/support to builders and developers to educate them about sediment control from building sites?

Twenty-two respondents answered this question (67%)

18% of LGOs who responded indicated their LGA provides information/support to builders and developers to educate them about sediment control from building sites, with 32% indicating their LGA does not and 50% being unsure.

Conclusions:

In the 82% of cases, LGAs involved in this survey either do not provide information/support to builders and developers to educate them about sediment control from building sites, or LGOs involved in managing sediment loss from building sites are unaware of the existence of this information and the role they may have to play in disseminating this information.

Recommendations:

There is much evidence to support the fact that awareness of the issues and of methods/mechanisms/technologies to effectively manage sediment loss from building sites is essential to increasing compliance. As such, it is recommended that sediment control is included as a 'Condition of Approval' of all subdivision and building permits.

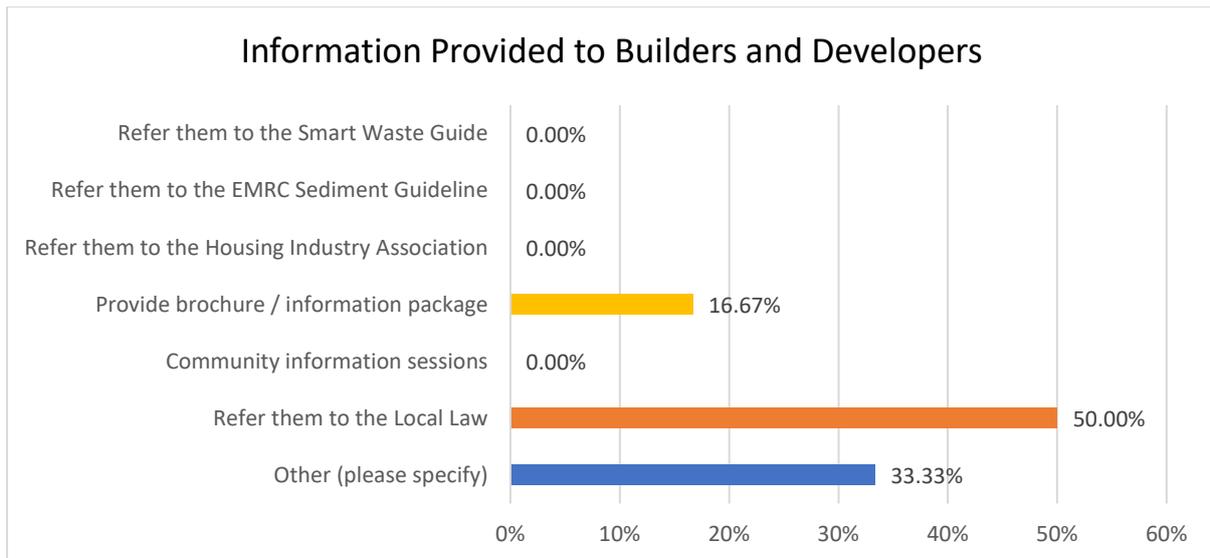
It is also recommended that information packages (such as a toolkit for developers and builders operating in a LGA's jurisdiction) are provided by LGAs free of charge before and during subdivision and building approval processes. Furthermore, tools to support the investigation and/or self-reporting of non-compliance should be provided. Actions such as these should reduce the occurrence of proponents claiming they were not aware and/or not informed by the LGA.

The Sediment Task Force has developed resources that will be useful in this regard, and may be adapted to suit the individual needs of LGAs. In particular, a sediment control on-site checklist for builders and a sediment control on-site checklist for LGOs is now available. A link is available on the [Useful Resources](#) page.

Other LGAs in Perth and across Australia have resources they may be willing to share.

Q32- If yes, how?

Six respondents answered this question (18%)



Other responses were:

1. "Raise the issue in the Catchment Management Plan".
2. "Condition on permits".

Conclusions

The most common way of informing builders and developers was referring them to the LGA's Local Law (50%) and providing brochures/information packages (17%). 33% of LGOs utilized management plans or conditions on permits as a tool for information/support for builders and developers to educate them about sediment control from building sites.

It is believed that as an education tool, Local Laws do not provide information to educate/inform of best practice management but are instead prescriptive in terms of conditions.

Notably, **not one** survey participant identified that their LGA refers developers and/or builders to the Master Builders Association, the Housing Industry Association, the Smart Waste Guide, EMRC's sediment guideline or recommends that they attend information sessions on this issue. These resources are readily available and have been specifically developed for builders and developers to assist them in addressing sediment loss.

Recommendations

That LGAs refer developers and/or builders to the Master Builders Association, the Housing Industry Association, the Smart Waste Guide and other educational and information resources and events where relevant, including the Sediment Task Force's website for information and resources. Links to these resources can be found in the [Useful Resources](#) section.

Q33 - Does your LGA impose any conditions on development approvals that relate to the management of sediment loss from building sites?

Twenty-two respondents answered this question (67%).

41% of LGOs who responded indicated their LGA imposes conditions on development approvals that relate to the management of sediment loss from building sites, with 18% indicating their LGA does not, and 41% being unsure.

Conclusions:

In 59% of cases, LGOs involved in managing sediment loss from building sites believe that either their LGA **does not** impose conditions on development approvals that relate to the management of sediment loss from building sites, or LGOs are unaware of this process.

Recommendations:

Ensure all LGOs with a management or reporting responsibility in this area have a thorough understanding of how their LGA can impose conditions on development approvals that relate to the management of sediment loss from building sites.

LGAs in the Swan Canning catchment can refer to the Department of Planning, Lands and Heritage and the Western Australian Planning Commission’s *Model Subdivision Conditions Schedule May 2019*. Adoption of model condition D9 in this document will help ensure the correct controls related to sediment loss are mandated.

Q34 - If yes, what sort of conditions?

Nine respondents answered this question (27%). Note the below listed responses are verbatim.

Responses by LGOs who answered this question were:

Responses
Management plan that is approved by the City’s Environmental Services.
Erosion control fencing, dust management etc.
It is covered in subdivisional works management – building licences do not come with conditions.
Dust control, stormwater management, waterways, standard conditions provided through the WAPC. Note not specifically addressing sediment loss, rather the management of water and activities that may carry sediment off the site.
Requirement to comply with the CMP, in which the builder must state how dust will be controlled and how run off from wash downs etc will be prevented.
Building Permits.
Developers must maintain development sites to ensure dust is contained as much as possible.
Conditions are placed on requiring a dust management plan.
I believe a standard WAPC condition.

Conclusions:

It is evident that not all LGOs are aware that conditions can be placed on subdivisional approvals and building permits by their LGA and what sort of conditions can be imposed.

Recommendations:

Ensure all LGOs with a responsibility in this area have a thorough understanding of how their LGA can impose conditions on development approvals that relate to the management of sediment loss from building sites.

LGAs in the Swan Canning catchment can refer to the Department of Planning, Lands and Heritage and the Western Australian Planning Commission’s *Model Subdivision Conditions Schedule May*

2019. Adoption of model condition D9 in this document will help ensure the correct controls related to sediment loss are mandated.

Q35 - Does your LGA require builders to submit a dust management plan or construction management plan during the building planning approvals process?

Twenty-one respondents answered this question (64%).

71% of LGOs who responded indicate that their LGA requires builders to submit a dust management plan or construction management plan during the building planning approvals process, with 10% indicating their LGA does not and 19% being unsure.

Conclusions:

71% of LGAs in this sample require builders to submit a dust management plan or construction management plan during the building planning approvals process. There is, however, the perception that compliance is not being ascertained as per the conditions of the management plan. Also, there seems to be a reliance on external parties making a complaint and some LGOs believe that only commercial construction is being addressed, whilst others believe monitoring is being conducted by the LGA.

Recommendations:

LGAs should communicate the enforcement and compliance procedures they are implementing to all staff. LGAs should ensure all LGOs are aware of these management plans as a key tool, and that monitoring for compliance is undertaken on a regular basis for all types of sites/projects rather than there being a reliance on an external complaint(s) being received.

LGAs in the Swan Canning catchment can refer to the Department of Planning, Lands and Heritage and the Western Australian Planning Commission's *Model Subdivision Conditions Schedule May 2019*. Adoption of model condition D9 in this document will help ensure the correct controls related to sediment loss are mandated.

Q36 - If yes, how is compliance with the management plan ascertained?

Seventeen respondents answered this question (52%)

Conclusions:

82% of LGOs indicated their LGA ensures that compliance with developers and builders' dust or construction management plans is ascertained by monitoring conducted by the LGA.

Other methods of ascertaining compliance are complaints from residents/community or LGO observation.

12% indicated their LGA does not ascertain compliance. Audits of the builder's internal records is not a chosen method of ensuring compliance. This may mean that the onus is on the developer and builder for self-assessment of compliance. This may or may not be effective.

Recommendations:

Again, the results indicate that there is a reliance by LGAs on effective monitoring by LGOs and by responding to complaints. More proactive methods are recommended, including undertaking random audits of a small sample of builders' internal records to improve levels of compliance.

Section 5 – Survey Conclusion

Q37 - Which of the following do you think would have the biggest impact on reducing the amount of sediment leaving building sites? (Please rank these suggestions from 1 being the biggest impact to 9 as the lowest impact)

Twenty-two respondents answered this question (67%). Responses are summarised below.

Results:

A) Most popular solutions Number 1 ranking (in order of significance)

- Educate builders of the reason why sediment control is necessary (4 votes).
- Educate builders of the requirements of the legislation (3 votes).
- Pursue prosecutions in the court for repeat offenders (3 votes).
- Have consistent laws across the Perth metropolitan region (3 votes).
- Increase the number of compliance inspections completed at building sites (2 votes).
- Increase the amount of fines given for non-compliance with sediment control laws (2 votes).
- Implement monitoring of building sites (2 votes).
- Enact more robust laws/laws that are easier to enforce (2 votes).
- Have consistent laws across the Perth metropolitan region (2 votes).
- Include sediment control conditions on planning approvals (1 vote).

B) Most popular four solutions Number 2 ranking

- Increase the number of compliance inspections completed at building sites (4 votes).
- Enact more robust laws/laws that are easier to enforce (3 votes).
- Include sediment control conditions on planning approvals (2 votes).
- Have consistent laws across the Perth metropolitan region (2 votes).

C) Most popular three solutions Number 3 ranking

- Implement monitoring of building sites (2 votes).
- Include sediment control conditions on planning approvals (2 vote).
- Pursue prosecutions in the court for repeat offenders (2 votes).

Responses											
	1	2	3	4	5	6	7	8	9	TOTAL	SCORE
educate builders of the requirements of the legislation	5.88% 1	5.88% 1	23.53% 4	23.53% 4	11.76% 2	0.00% 0	5.88% 1	17.65% 3	5.88% 1	17	5.24
include sediment control conditions on planning approvals	29.41% 5	17.65% 3	11.76% 2	11.76% 2	5.88% 1	0.00% 0	0.00% 0	0.00% 0	23.53% 4	17	6.12
educate builders of the reason why sediment control is necessary	5.88% 1	0.00% 0	17.65% 3	29.41% 5	23.53% 4	0.00% 0	11.76% 2	5.88% 1	5.88% 1	17	5.24
increase the amount of fines given for non compliance with sediment control laws	5.26% 1	5.26% 1	10.53% 2	0.00% 0	0.00% 0	31.58% 6	21.05% 4	26.32% 5	0.00% 0	19	4.05
increase the number of compliance inspections conducted of building sites	0.00% 0	5.26% 1	10.53% 2	10.53% 2	26.32% 5	21.05% 4	10.53% 2	10.53% 2	5.26% 1	19	4.53
implement monitoring of building sites	4.76% 1	33.33% 7	14.29% 3	0.00% 0	19.05% 4	14.29% 3	9.52% 2	4.76% 1	0.00% 0	21	6.00
pursue prosecutions in the court for repeat offenders	5.56% 1	0.00% 0	5.56% 1	16.67% 3	5.56% 1	0.00% 0	22.22% 4	16.67% 3	27.78% 5	18	3.44
enact more robust laws / laws that are easier to enforce	5.26% 1	21.05% 4	10.53% 2	0.00% 0	21.05% 4	5.26% 1	10.53% 2	10.53% 2	15.79% 3	19	4.84
have consistent laws across the Perth metropolitan region	31.82% 7	9.09% 2	0.00% 0	9.09% 2	0.00% 0	18.18% 4	4.55% 1	4.55% 1	22.73% 5	22	5.32

GENERAL CONCLUSIONS AND RECOMMENDATIONS

These survey responses provide guidance for LGAs regarding mechanisms/tools/procedures that will enhance their capacity to effectively manage this important environmental issue.

LGOs believe that educating builders about why sediment control is necessary will have the biggest impact on reducing the amount of sediment leaving building sites. Interestingly, whilst this is

perceived as the best method to address this issue, LGOs are not referring builders to soil and erosion guidelines or building industry associations who can provide guidance.

LGOs should utilise existing resources and promote educational opportunities to builders and developers, disseminate existing information and consider educating and providing information to builders in their operational jurisdiction. Significant change would result if participating in an educational process could be a condition of the development/building permit approval processes.

Educating builders on their legislative requirements, pursuing prosecutions in the court for repeat offenders, and implementing monitoring of building sites are also seen to be actions that would have the biggest impact on reducing the amount of sediment leaving building sites. In addition, increasing the number of compliance inspections completed at building sites, including sediment control conditions on planning approvals, and increasing the number of fines given for non-compliance with sediment control laws are seen as important tools.

It is highly recommended that LGOs commit additional resources to these areas. Revenue from fines and savings made in regard to improved compliance (for example, via reduced expenses for damage to WSUD and drainage infrastructure and street sweeping) could be used to fund the additional resources required.

It is also believed that having consistent laws across the Perth metropolitan region and enacting more robust laws that are easier to enforce will have a big impact on reducing the amount of sediment leaving building sites.

It is recommended that all LGOs review their Local Law's efficacy in dealing with managing erosion and sediment control from building sites. A template of a simple and effective Local Law for LGOs to gazette that deals with erosion and sediment control specifically is available for use by LGOs in Perth.

LGOs are encouraged to lobby for a consistent Local Law for managing sediment loss from building sites in WA as it is believed a consistent (standardised) Local Law will be beneficial for LGOs and for builders for reasons of clarity, cost-effectiveness and equity.

In addition to enacting their Local Laws to effectively manage sedimentation, LGOs should consider issuing sediment control advice with building approvals, including sediment control in compliance action, and including planning approval conditions or advice notes requiring developers to control and manage public works to ensure erosion and sediment control best management practices.

USEFUL RESOURCES

<https://www.perthnrm.com/resources/resources-sediment-management>

Master link for information on erosion and sediment control for building, subdivision, and construction sites.

Local Government Case Study Series

Examples of Local Government's response to erosion resulting from urban development in WA.

<https://www.perthnrm.com/programs/living-landscapes/sediment-management/local-government-case-studies>

Building site checklists for LGA's and Builders

https://perthnrm.com/nrmwp/wp-content/uploads/2020/03/STF_LGA_Checklist-and-Infographic.pdf

For Local Government Officers – *On-Site Checklist for Inspecting Soil Erosion and Sediment Loss from Building, Subdivision and Construction sites.*

https://perthnrm.com/nrmwp/wp-content/uploads/2020/03/STF_Checklist-and-Infographic_web.pdf

For Builders – *On-Site Builder's Checklist for Preventing Sediment Loss.*

Model Subdivision Conditions

<https://www.dplh.wa.gov.au/getmedia/aece0c3d-e649-42e8-bc1b-aa1d0f60eb0c/SDV-Model-subdivision-conditions-schedule-May-2019>

Department of Planning, Lands and Heritage and the Western Australian Planning Commission's *Model Subdivision Conditions Schedule May 2019.*

Auditing tools

<https://waterbydesign.com.au/esc>

Templates that can be used by LGAs undertaking a Soil Erosion & Sediment Control Internal Management Systems Review Report Template & Action Plan (includes Step-by-Step Guideline).

<http://www.coastalconference.com/2011/papers2011/Prue%20Tucker%20Full%20Paper.pdf>

The approach described in this case study could be effectively applied across councils who are facing the challenging task of raising the bar in the area of erosion and sediment control.

<https://www.clearwater.asn.au/user-data/resource-files/Chrispijn,-John---Non-Refereed-Paper.pdf>

Improved sediment and erosion management through distribution of information, factsheets, sediment control kits and delivery of training for LGA work crews, as well as the employment of a regional Sediment and Erosion Control Officer.

<http://www.environment.nsw.gov.au/resources/stormwater/07441swcouncilopspt2.pdf>

Review of your LGA's environment management processes/culture.

Local Law template

<http://www.nedlands.wa.gov.au>

The City of Nedlands is willing to provide a copy of their Local Law and a template that LGAs can use to draft their own Local Law for erosion and sediment control.

Information and Support for Builders and Developers

Master Builders Association

<https://www.mbawa.com/>

Smart Waste Guide

<https://www.wasteauthority.wa.gov.au/publications/smart-waste-guide>

Eastern Metropolitan Regional Council

<https://www.emrc.org.au/>

Housing Industry Association

<https://hia.com.au/>



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