Planning and Sustainability
Local Planning Policy 4.18
EARTHWORKS AND SAND DRIFT

1.0 CITATION

This Policy has been prepared under Part 2, Division 2 of the deemed provisions for local planning schemes, contained in Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

2.0 INTRODUCTION

The purpose of this Policy is to provide guidance for the assessment of development applications for earthworks, and to provide guidance on dust management measures to be employed during earthworks on-site as part of a development approval or subdivision approval.

3.0 OBJECTIVE

The objectives of this policy are to:

- Minimise the risk of adverse impacts caused by sand drift and dust nuisance on the health and amenity of adjacent residents.
- Incorporate a procedure for the assessment of the potential for a development site to generate dust prior to site works commencing.
- Clarify responsibilities and provide guidance for determining appropriate measures and contingency arrangements to manage the potential for sand and dust leaving the site during and following earthworks.
- Establish guidance on the consideration of development applications proposing earthworks to ensure that these are dealt with in a consistent manner.
- Facilitate the timely development of land without prejudicing future development outcomes.

4.0 APPLICATION OF THIS POLICY

This Policy should be read in conjunction with the relevant provisions of the City of Wanneroo District Planning Scheme No. 2 (DPS 2) and its associated policies.

5.0 POLICY PROVISIONS

5.1 Applications for Development Approval

In addition to having due regard for the matters contained in Clause 67(2) of the deemed provisions, an approved local structure plan and/or subdivision is required as a prerequisite prior to the consideration of an application seeking development approval for earthworks, unless Council is satisfied that the development proposed:

a) Does not conflict with the principles of orderly and proper planning; and

b) Would not prejudice future development outcomes of the area; and

c) Is for the purpose of achieving one or more of the following:

(i) Allowing access or the provision of services or infrastructure; or

(ii) Undertaking forward works to enable subdivision.

5.2 Dust Management Plans

5.2.1 Preparation and Submission

a) The proponent will be required to prepare a Dust Management Plan (DMP) accompanying a proposal for earthworks being a development or subdivision application or when engineering drawings are submitted to the City.

b) The DMP should be prepared in accordance with the DWER Guidelines. The DMP is to be signed by the author certifying that it has been prepared in accordance with DWER Guidelines. The DMP is to include a site risk assessment and classification and dust management requirements. A copy of this is contained in **Appendix 1** and forms the basis of a DMP.

c) The site risk assessment establishes the potential for dust and sand drift to be generated from a development site by requiring the calculation of a site classification score. **Sheet 1 in Appendix 1** contains the site risk assessment and classification chart. **Sheet 3 in Appendix 1** includes additional considerations when calculating a site risk assessment.

d) The dust management requirements set out in **Sheet 4 in Appendix 1** outlines contingency arrangements to be employed to manage dust and sand drift from development sites where earthworks are being undertaken depending on the site classification score.

e) The major factors influencing the risk of dust and sand drift being generated from a development site and a range of dust control measures are contained in **Appendix 2 and 3**, respectively. These considerations influence both the site risk assessment classification score as well as dust management.

5.2.2 Approval and Monitoring

a) No earthworks shall commence on site until such time as the DMP has been endorsed by the City.

b) It is the landowner's responsibility to maintain dust suppression on development sites both during and following the completion of earthworks on site. In the case of subdivisions, where new lots are created and sold to new owners, the responsibility to carry out dust management resides with any new owner.

c) Dust and sand drift is considered by the City to be a matter of significant nuisance with a high risk of adversely impacting on public amenity, health and safety. Where it is identified that earthworks do not comply with the endorsed DMP, the City will prioritise the matter and take enforcement action as set out in the City's Local Planning Policy 4.14: Compliance.

DEFINITIONS

Deemed provisions: means the deemed provisions for local planning schemes, included in Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

DWER Guidelines: means the Department of Water and Environmental Regulation (formerly the Department of Environmental Regulation) "*A guideline for managing the impacts of dust and associated contaminates from land development sites, contaminated sites, remediation and other related activities*" dated March 2011.

Dust: means solid particles generated and dispersed in the air by processes such as handling, crushing and grinding of organic or inorganic materials such as rock, ore, metal, coal, wood or grain and stockpiling of materials and windblown dust.

Earthworks: means any works which alter the levels of a site which may include re-contouring, filling, cutting, draining and/or stabilising of land as part of works associated with the development of land.

Sand: means any granular material consisting of small eroded fragments of rock finer than gravel whether or not forming part of a beach, desert or bed of any river and includes dust and organic matter.

Owner	Planning and Sustainability	**Document Reference**	25/379761
Implementation	1 December 2025	**Next Review**	November 2027
VERSION	**DECISION TO ADOPT/AMEND**		
1 – 16/399999	Council Resolution to Adopt on 6 December 2016 (PS12-12/16)		
2 – 21/498859	Council Resolution to Amend on 16 November 2021 (PS10-11/21)		
3 – 25/379761	Policy Review Committee Resolution to Amend on 1 December 2025 (4.4)		

Appendix 1: Site risk assessment/classification for activities generating uncontaminated dust

Sheet 1: Site classification assessment chart

Part A. Nature of site

Item	Score options				Allocated score
1. Nuisance potential of soil, when disturbed	Very low.....1	Low.....2	Medium.....4	High.....6	
2. Topography and protection provided by undisturbed vegetation	Sheltered and screened.....1	Medium screening....6	Little screening.....12	Exposed and wind prone.....18	
3. Area of site disturbed by the works	Less than 1ha.....1	Between 1 and 5ha..3	Between 5 and 10ha.....6	More than 10ha.....9	
4. Type of work being done	roads or shallow trenches.....1	roads, drains and medium depth sewers.....3	Roads, drains, sewers and partial earthworks.....6	Bulk earthworks and deep trenches.....9	
				TOTAL score for Part A	

Part B. Proximity of site to other land uses

Item	Score options				Allocated score
1. D istance of other land uses from site	More than 1km.....1	Between 1km and 500m.....6	Between 100m and 500m.....12	Less than 100m.....18	
2. Effect of prevailing wind direction (at time of construction) on other land uses	Not affected.....1	Isolated land uses affected by one wind direction.....6	Dense land uses affected by one wind direction.....9	Dense/sensitive land uses highly affected by prevailing winds.....12	
				TOTAL score for Part B	

SITE CLASSIFICATION SCORE (A X B) =

Sheet 2: Site assessment details

Engineer for the developer _____

Site detail _____

Local government _____

Location of works (use AMG grid reference from Metropolitan Street Directory and nearest main street) _____

Project name/stage _____

Description of works _____

Contract dates (starting/completion dates and duration in weeks) _____

Score from assessment chart _____

Special considerations _____
(refer to Appendix 1, Note 4)

Comments at completion of construction:
(to include details of dust-related problems and provisions and contingency arrangements which were actually carried out)

_____

_____

_____

_____

Sheet 3: Notes relating to 'site assessment classification chart'

1. The site assessment chart is used to differentiate between Classifications 1, 2, 3 and 4, as defined within these guidelines. Classifications 2 and 3 are subject to Note 4, below.

2. Sites may be divided into two or more classifications depending mainly on the proximity of existing land uses.

3. In assessing the relevant score level, the 'effect of prevailing winds' must be carefully considered. While houses, commercial areas, market gardens, schools and factories have high sensitivity ratings, roads, parks and recreational areas have lower sensitivity ratings.

4. Construction during dry period (1 October – 31 March).

   (a) Where other land uses are within 100 metres of the site:

      (i) sites assessed as Class 3 will automatically become Class 4, and

      (ii) sites assessed as Class 2 will automatically become Class 3.

   (b) Where other land uses are situated between 100 metres and 500 metres from the site, an on-site re-evaluation of Class 3 sites shall be conducted by the engineer for the developer, the local government or the DEC to determine the extent of additional Class 4 requirements considered necessary (if any).

Sheet 4: Dust management and monitoring requirements for each site classification score

Based on the total score obtained from the 'SITE CLASSIFICATION ASSESSMENT CHART' and notwithstanding any allowance for special site conditions during the dry period, (refer to Note 4, Appendix 1) the following site classification will apply:

Site classification 1 — under 199;

Site classification 2 — 200 to 399;

Site classification 3 — 400 to 799, and

Site classification 4 — over 800.

Note: • Unique sites may need special assessment.
• It is essential that any contracts for construction work on site include the relevant contingency arrangements appropriate for the site classification.

- **Classification 1 (score under 199, considered negligible risk)**

Provisions:
• None required.
Contingency arrangements:
• None required.

- **Classification 2 (score between 200 and 399, considered low risk)**

Provisions:
• The developer shall supply a contingency plan to the local government, which shall detail the activities to be undertaken should dust impacts occur.

Contingency arrangements:
• Include an allowance for water-cart operation, wind fencing and surface stabilisation during the construction period for the purposes of dust suppression.
• All areas of disturbed land should be stabilised to ensure that the disturbed area exposed at any time is kept to a practical minimum.

Monitoring requirements:
• Complaints management system in place (complaints recorded and acted on promptly).
• Notice to be erected at the site, providing contact details of the person to be contacted and works.

- **Classification 3 (score between 400 and 799, considered medium risk)**

Provisions:

- Appropriate wind fencing of a length specified in the air quality management programme needs to be stored on site or available within one hour of being required by the engineer for the developer/local government/DEC.
- All areas of disturbed land should be stabilised to ensure that the disturbed area exposed at any time is kept to a practical minimum to prevent exceedence of dust standards (see Section 4.4.2).
- The engineer for the developer shall maintain close control of works with dust creating potential (for example, allowable length of open trenching).
- After all siteworks are completed, and before the contractor has vacated the site, the developer should ensure that the entire site is stable. The developer then retains responsibility for site stability until change of ownership/control takes place. After the change of ownership/control has taken place, the new owner or controlling party will inherit responsibility for site stabilisation.

Contingency arrangements:

- Suitable water-carts in good working condition and of not less than 10,000 litres capacity per 7.5 hectares of disturbed site, or other suitable alternatives, shall be available to commence watering on the site within 18 hours of being required to do so by the engineer for the developer/local government/DEC.
- Surface stabilisation equipment shall be available to commence operation on site within 48 hours of being required to do so by the engineer for the developer/local government/DEC and with sufficient capacity to cover the disturbed site area within a further 48 hours.
- Wind fencing shall be erected within 18 hours of the contractor being required to do so by the engineer for the developer/local government/DEC. Dust generating works on the site shall cease in the interim.
- If dust-related complaints are generated due to activities on the site, the developer may be required by the local government or an authorised DEC officer to distribute advisory notices to adjoining land occupiers within 48 hours. A notice form is provided in Sheet 5 of Appendix 1.
- If dust-related complaints are generated due to material which has been excavated for trenching, the developer shall ensure this material is stabilised within 48 hours of being requested to do so by the engineer for the developer, local government or an authorised DEC officer.
- Include an allowance for water-cart operation, wind fencing and surface stabilisation during the construction period for the purposes of dust and wind-borne material suppression.
- Include an allowance for surface stabilisation for the purposes of dust and wind-borne material suppression to be maintained after the construction period and until change of ownership/control takes place.

Monitoring requirements

- Site dust management system in place.
- On-site dust monitoring against short term criteria.
- Off-site (compliance) dust monitoring at site boundary (if close to sensitive receptors) or at sensitive receptors. See Section 4 and Appendix 4.
- Complaints management system in place (complaints recorded and acted on promptly).
- Exceedences to be reported to the relevant authority – DEC, Local Government or DOH.
- Notice to be erected at the site, providing contact details of the person to be contacted regarding the works.

Classification 4 (score over 800, considered high risk)

Provisions:

- Advisory notices shall be issued to adjoining land occupiers, the local government and the DEC at least 48 hours before site works commence. The notices shall include the name of the developer, engineer for the developer, contractor/s, contract period, contact telephone numbers of the site engineer and local government environmental health officer as detailed in Sheet 5 of Appendix 1.
- Fencing to the extent and in locations agreed to by the developer and local government shall be erected before any part of the site surface is disturbed.

Note: This provision does not necessarily mean that the total site boundary is to be fenced. The fence is to be installed to an extent which will protect adjacent land uses and in most cases should be erected on the edge of the area which will be disturbed rather than on the site boundary.

- An amount of wind fencing of a length specified in the air quality management programme needs to be stored on site or available within one hour of being required by the engineer for the developer/local government/DEC.
- The nominated wind fencing is to remain in position until the disturbed surface is stable.
- Surface stabilisation is to be applied to the disturbed area of each section of the site upon completion of the works in that section.
- The engineer for the developer shall maintain strict control of works with dust-creating potential. Material which has been excavated for trenching shall be stabilised if the trench is to be left exposed for longer than 72 hours.
- After all siteworks are completed, and before the contractor has vacated the site, the developer should ensure that the entire site is stable. The developer then retains responsibility for site stability until change of ownership/control takes place. After the change of ownership/control has taken place, the new owner or controlling party will inherit responsibility for site stabilisation.

Contingency arrangements:

- Suitable water-carts in good working condition and of not less than 10,000 litres capacity per 5 hectares of disturbed site, or an appropriate alternative, shall be available to commence immediate watering on the site.
- Surface stabilisation equipment shall be available to commence operation on site within 48 hours of being required to do so by the engineer for the developer/local government/DEC and with sufficient capacity to cover the disturbed site area within a further 48 hours.
- Additional wind fencing shall be erected within 18 hours of the contractor being required to do so by the engineer for the developer/local government/DEC. Dust generating works on the site shall cease in the interim.
- Include an allowance for water-cart operation, wind fencing and surface stabilisation during the construction period for the purposes of dust and wind-borne material suppression.
- Include an allowance for surface stabilisation for the purposes of dust and wind-borne material suppression to be maintained after the construction period and until change of ownership/control takes place.

Monitoring requirements

As for Classification 3.

Sheet 5: Notice to residents

Land development is being carried out in your area by:

_____ (Name of developer)

The development commencement date is: _____

Completion date is expected to be: _____

A site risk assessment has been conducted in consultation with your local government:_____

It has been agreed by all parties concerned that the:

_____
(Project type - land development project, site remediation works etc.)

must adopt adequate measures to prevent the generation of unacceptable levels of dust. You are advised that the developer of the site has agreed to implement the provisions as outlined in the Department of Environment and Conservation's '*A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities*' (A copy of this guideline may be obtained from your local government). Should you feel that excessive dust or other air pollutants are being generated due to the site works, you are advised to contact the site engineer for the developer:

_____(Name of engineer) by telephoning _____ to discuss the issue.

Compliance Services at the City of Wanneroo may be contacted on:_____

Appendix 2: Factors influencing levels of dust and other air pollutants

Factor	Description
Soil type	• The soil properties of a site will have a considerable impact on the amount of dust generated. • In general soils with a dominant particle size corresponding to gravel size or larger have less potential of becoming airborne than finer particles such as fine sand, silt and clay. However, soil may comprise a mixture of different soil particles, for example, fine contaminated dust, such as heavy metals, mixed with coarse particles. • Soil moisture content is also important. Dry or non-wetting soils are more likely to become air borne. • An assessment of soil particle size distribution can help to determine the potential for particles to become airborne. As a general guide, particle sizes of 50μm or more tend not to become airborne. A soil profile will also provide information on the different soil layers and their potential for particle lift off.
Exposed area on site	• Sites with a larger exposed area are identified as having a greater dust generating potential.
Duration of works	• The longer the project, the greater the dust risk as the potential for exposure increases.
Proximity to sensitive receptors	• The proximity of a site to sensitive receptors has a significant influence on the dust risk potential of a site. • A site that is located close to sensitive receptors, such as, residential housing, children's daycare, schools, hospitals, sports fields etc., will generally require more preventative measures compared to a site in an isolated remote location.
Contamination level	• The concentration and distribution of contaminants at the site will determine the risk potential for dust and other air pollutants of the site. The higher the concentration of contaminants and the greater the distribution of contaminants at the site, the greater will be the risk potential.
Prevailing wind direction and speed	• The direction of the prevailing winds can also influence the risk potential of a site for dust and other air pollutants. If the prevailing winds (predominant wind direction) are blowing towards sensitive receptors, the risk potential increases because the sensitive receptors are more likely to be impacted than if the winds are blowing away from the sensitive receptors. • The higher the wind speed, the greater the potential for dust lift. • Daily and seasonal variation of wind speed and direction should be considered.
Nature of works	• The nature of works to be conducted will affect the dust levels, for example, land clearing and stockpiling may generate more dust than site levelling.
Topography	• The topography of the site may influence wind behaviour at the site which could influence the dispersion of dust and other air pollutants from the site.

Appendix 3: Dust control measures

Dust control measure	Description
Limit cleared areas	Before the commencement of any site works and during the operation, as much vegetation as possible should be retained, including patches and strips to minimise dust. Dust emissions can be controlled using the following procedures: • Before any site works commence, plan and locate the vegetation cover that needs to be retained. • Protect this vegetation by fencing or blocking off from the rest of site operations. • In other areas, maintain the original vegetation cover for as long as possible. • Avoid clearing the entire site at once, instead clear areas as required in stages of the operation. Retaining the original trees, shrubs and grasses is one of the most efficient and effective ways of minimising dust emissions. Even low or sparse scrub can be very effective at dissipating wind velocity at the ground surface, where dust lift off occurs.
Vegetative stabilisation	Vegetation is a very effective form of reducing dust emissions. The following procedures should be considered in minimising dust emissions: • Retain as much existing vegetation as possible. • If an area needs to be cleared, transplant established plants that must be disturbed to areas that need vegetation. • If existing vegetation must be removed and can not be immediately transplanted elsewhere, remove and maintain them for replanting at project completion. • If trees and plants must be removed and it is not possible for them to be replanted, consider chipping and using the material as mulch – the advantage is that reseeding of original vegetation can occur. Where possible, restore vegetation that is native to the area to maximise plant success and improve environmental conditions.
Timing of development	It is the developer's responsibility to schedule work on land development sites such that it is carried out at the time of the year, and in a way, which reduces the potential impacts of dust and smoke to a minimum. The time of year when these activities are conducted is critical. Historical records of complaints received by DEC show that very few dust problems occur during winter. Activities with high dust-causing potential, such as topsoil stripping, should not be carried out in sensitive areas during adverse wind conditions. When necessary, topsoil should be stripped in discrete sections, allowing buffer strips (windbreaks) between clearings.

Dust control measure	Description
Development staging	Dust generated by bulk earthworks being done during the summer months, particularly with housing in close proximity, can adversely impact upon people who live near development sites. These effects may be reduced if developments can be staged in a sequence whereby bulk earthworks are carried out in the winter months and the completed earthworks "front" is kept to about 100 metres in advance of newly-created lots. In planning the staging of developments, it should be recognised that completed subdivisional stages are often quickly built upon and, hence, the completed stage should be considered to be an improved area when developing the next stage. This means that subsequent stages of any development can require more stringent dust control measures, as the completed subdivisional areas represent an increase in the potential for adverse impacts.
Wind barriers	Having appropriate wind barriers can be an effective measure for the control of dust over short distances. Wind barriers provide protection against the movement and impact of dust on nearby land uses. Wind barriers should be placed on site before commencement of works and when it is apparent that one is required during the phase of the operation. Consider the following options when placing barriers to prevent dust emissions: • Wind barriers are most effective when placed perpendicular to the direction of the prevailing wind, but will have little or no effect when the wind direction is parallel to the fence. • When choosing wind barriers it has been observed that solid barriers provide Significant reductions in wind velocity for relatively short leeward distances, whereas porous barriers provide smaller reductions in velocity for more extended distances. • Wind barriers should be at least 2 metres high. • The screening material should have a porosity of 50% or less. •
Earth moving management	Earth-moving works have the potential to generate large amounts of dust. Planning earth-moving works particularly at the start of an operation can reduce dust emissions by limiting the time the site is exposed. Options for dust control can include the following: • Plan earth-moving works so that they are completed just prior to the time they are needed. • Observe weather conditions and do not commence or continue earth moving works if conditions are unsuitable e.g., under conditions of strong winds. • Reduce off-site hauling via balanced cut and fill operations. • Pre-water areas to be disturbed.
Management of Material	Material stockpiles are capable of generating large amounts of dust. In particular, fine materials stored in stockpiles can

Dust control measure	Description
stockpiles	be subject to dust pick-up. Materials being loaded onto conveyor belts or into trucks, rail cars or marine vessels are also potential sources of dust emissions. Dust emissions from material stockpiles can be minimised through the use of the following procedures: • Locate stockpiles in sheltered areas or in warehouses where possible with building panels and doors effectively sealed. Otherwise, stockpiles should be covered. • Where stockpiles are located in open areas, limit the height and slope of the stockpiles to reduce wind pick up, orient stockpiles lengthwise into the wind so they offer the minimum cross-sectional area to prevailing winds, install wind barriers on three sides of the stockpile. • Limit activity to the downwind side of the stockpile. • Limit drop heights from loading facilities and use closed conveyors where possible. Transfer points should also be minimised. Sprinkler systems could also be used on conveyor systems. Alternatively, dust collection systems, such as, cartridge or baghouse systems could be used instead of sprinklers, where moisture is of concern , for example, with mineral concentrates.
Watering	Watering is applicable to almost every aspect of site operations, from reducing dust lift off from roads and other traffic areas and during earthworks, to controlling dust during movement of materials such as loading/offloading and transportation of materials. Watering is a very effective short-term measure, however its efficiency decreases as wind velocity and evaporation rate increase. Dust emissions can be minimised using the following watering procedures: • The surface should be dampened to prevent dust from becoming airborne but should not be wet to the extent of producing run-off. Alternatively, wetting agents could be used, particularly for non-wetting soils. • Watering is more effective when undertaken prior to strong breezes. • Use watering sprays on materials to be loaded and during loading. • The use of scheme water should be discouraged and alternative supplies used whenever possible. However care must be taken to ensure that the quality of water will not have adverse environmental health impacts. • Real time automated response systems to turn on water cannon systems in response to dust levels or high wind speeds could be used. These can help save water by only turning on water cannons during adverse conditions and also help reduce the possibility of operator error. • In cases where severe water restrictions are imposed, other measures like the use of wetting agents such as chemical stabilisation or hydromulch, could be considered. See below.
Hydromulch	Hydromulch is a very effective measure for preventing dust lift-off from areas where bulk earthworks have been

Dust control measure	Description
	completed and little or no further vehicular or pedestrian traffic is likely. It is a versatile tool, as the constituents of spray mulch can be varied to suit the requirements of the user and the site. The following procedures for hydromulch can be utilised to reduce dust emissions: • Vehicular and pedestrian access to treated areas should be restricted to prevent disturbance to the hydromulch layer. • Wind barriers placed in isolated locations or where long-term effectiveness is required to control access and achieve maximum benefit. • For short-term stabilisation, hydromulch without grass seed should be sufficient stabilisation. • For longer-term stabilisation, hydromulch with grass seed and fertiliser should be included in the spray. Organic stabiliser can also be added to the mix to provide a more stable base for the germination of seeds. Recommended application rates for hydromulch should be sought from suppliers to ensure that application rates and the constituents of the mulch are appropriate to the task.
Chemical Stabilisation	Chemical stabilisers provide immediate coverage and protection; they are effective in areas that receive little traffic or disturbance. They provide a longer-term solution compared to watering, although it may be necessary for the chemical ingredients to be evaluated with regard to their environmental effects. Chemical stabilisers work by binding the soil particles together to create an artificial crust on the soil surface that is less prone to disturbance by wind. The following options should be considered when using chemical stabilisers to reduce dust emissions: • Physical barriers or other methods of preventing traffic access should be used to protect stabilised areas. • The manufacturer's instructions should be followed to optimise performance.
Maintenance	The following routine maintenance procedures should also be implemented as a dust control measure: • There should be a nominated person with the responsibility for dust management. • All staff should be aware of the potential for dust generation and inducted on dust minimising practices. Staff operating dust control equipment should be trained and regularly have a refresher course. • Dust control equipment should be inspected regularly and defects repaired promptly. Spares should be kept on site for critical items of control equipment, such as water pumps for dust suppression sprays. • Trucks carrying contaminated soil from the site for disposal off-site should be washed down prior to leaving the site to prevent spreading contamination off-site.