9.4.3 Filling and excavation code

9.4.3.1 Application

1. This code applies to assessing:
2. accepted development subject to compliance with identified requirements, where acceptable outcomes of this code are identified requirements in a table of assessment for an overlay ([section 5.10](file:///\\ad\groups\CPS\CPED\CPBranch\C_PConf\CPOT_Sandbox\2017_Planning%20Act%20readiness\TEXT\Part%209%20-%20Development%20codes\Part5Overlays.docx)); or
3. operational work for [filling or excavation](Definitions.docx#FillOrExc) which is assessable development if this code is an applicable code identified in the assessment benchmarks column of a table of assessment for operational work ([section 5.8](Part5OperationalWork.docx)) or an overlay ([section 5.10](Part5Overlays.docx)); or
4. a material change of use or reconfiguring a lot if:
5. assessable development where this code is identified as a prescribed secondary code in the assessment benchmarks column of a table of assessment for material change of use ([section 5.5](Part5Lowdensityresidential.docx)) or reconfiguring a lot ([section 5.6](Part5ReconfigureLot.docx)); or
6. impact assessable development, to the extent relevant.

Note—The following purpose, overall outcomes, performance outcomes and acceptable outcomes comprise the assessment benchmarks of this code.

Note—This code does not apply to building work as defined in the Act.

Note—A development application involving a rock anchor within an adjoining site is submitted with proof of consent from an adjoining land and building owner.

Editor’s note—Guidance on managing the spread of invasive species in filling or excavation activities is provided in [Minimising Pest Spread Advisory Guidelines](http://www.daff.qld.gov.au/biosecurity) prepared for the Petroleum industry.

Editor’s note—Where [filling or excavation](Definitions.docx#FillOrExc) is conducted on land previously occupied by a notifiable activity or on land listed on the [Environmental Management Register](http://www.ehp.qld.gov.au/land/contaminated-land/index.html) or the [Contaminated Land Register](http://www.ehp.qld.gov.au/land/contaminated-land/index.html), the relevant Queensland Government department should be contacted for advice and guidelines.

1. When using this code, reference should be made to [section 1.5](Part1.docx#Part1Pt5) and [section 5.3.3](Part5TablesOfAssessmentIntro.docx#Part533).

Note—Where this code includes performance outcomes or acceptable outcomes that relate to:

* air quality assessment, guidance is provided in the [Air quality planning scheme policy](AirQualityPSP.docx);
* ecological assessment, koala habitat or development design, guidance is provided in the [Biodiversity areas planning scheme policy](BiodiversityPSP.docx);
* retaining wall construction, guidance is provided in the [Infrastructure design planning scheme policy](InfrastructureDesignPSP.docx);
* landscape design, guidance is provided in the [Landscape design guidelines for water conservation planning scheme policy](LandscapeDesignWaterConservPSP.docx);
* noise and dust impacts during construction and/or demolition, guidance is provided in the [Management plans planning scheme policy](ManagementPSP.docx);
* noise impact assessment, guidance is provided in the [Noise impact assessment planning scheme policy](NoiseImpactAssessmentPSP.docx);
* the selection of planting species, guidance is provided in the [Planting species planning scheme policy](PlantingSpeciesPSP.docx);
* significant vegetation, guidance is provided in the [Vegetation planning scheme policy](VegetationPSP.docx).

Editor’s note—For a proposal to be accepted development, subject to compliance with identified requirements, it must meet all the identified acceptable outcomes of this code and any other applicable code. Where it does not meet all identified acceptable outcomes, the proposal becomes assessable development and a development application is required. Where a development application is triggered, only the specific acceptable outcome that the proposal fails to meet needs to be assessed against the corresponding acceptable outcome or performance outcome and relevant overall outcomes. Other identified acceptable outcomes that are met are not assessed as part of the development application.

9.4.3.2 Purpose

1. The purpose of the Filling and excavation code is to assess the suitability of development for [filling or excavation](Definitions.docx#FillOrExc).
2. The purpose of the code will be achieved through the following overall outcomes:
3. [Filling or excavation](Definitions.docx#FillOrExc) does not adversely affect the visual character and amenity of the site or the surrounding area and provides access for maintenance to any structure as a result of [filling or excavation](Definitions.docx#FillOrExc).
4. [Filling or excavation](Definitions.docx#FillOrExc) does not adversely impact [significant vegetation](Definitions.docx#SignificantVegetation), water quality or drainage of upstream, downstream and adjoining land.
5. [Filling or excavation](Definitions.docx#FillOrExc) effectively manages the impacts associated with the activity.
6. [Filling or excavation](Definitions.docx#FillOrExc) and any retaining structure is designed and constructed to be fit for purpose and to protect services and utilities.

9.4.3.3 Performance outcomes and acceptable outcomes

Table 9.4.3.3.A—Performance outcomes and acceptable outcomes

|  |  |
| --- | --- |
| Performance outcomes | Acceptable outcomes |
| PO1  Development for [filling or excavation](Definitions.docx#FillOrExc) minimises visual impacts from retaining walls and earthworks. | AO1  Development ensures that the total height of any cut and fill, whether or not retained, does not exceed:   1. 2.5m in a zone in the Industry zones category; 2. 1m in all other zones, or if adjoining a sensitive zone. |
| PO2  Development of a retaining wall proposed as a result of [filling or excavation](Definitions.docx#FillOrExc):   1. is designed and constructed to be fit for purpose; 2. does not impact adversely on significant vegetation; 3. is capable of easy maintenance.   Editor’s note—A retaining wall also needs to comply with the [Building Regulation](https://www.legislation.qld.gov.au/Acts_SLs/Acts_SL_B.htm) and embankment gradients will need to comply with the [Building Regulation](https://www.legislation.qld.gov.au/Acts_SLs/Acts_SL_B.htm).  Note—Guidance on the protection of native vegetation is included in the [Biodiversity areas planning scheme policy](BiodiversityPSP.docx). | AO2.1  Development of a retaining structure, including footings, surface drainage and subsoil drainage:   1. is wholly contained within the site; 2. if the total height to be retained is greater than 1m, then: 3. the retaining wall at the property boundary is no greater than 1m above the [ground level](Definitions.docx#Groundlevel); 4. all further terracing from the 1m high boundary retaining wall is 1 vertical unit:1 horizontal unit; 5. the distance between each successive retaining wall (back of lower wall to face of higher wall) is no less than 1m horizontally to incorporate planting areas. |
| AO2.2  Development of a retaining wall over 1m in height protects significant vegetation on the site and on adjoining land and is designed and constructed in accordance with the structures standards in the [Infrastructure design planning scheme policy](InfrastructureDesignPSP.docx) and certified by a [Registered Professional Engineer Queensland](Definitions.docx#RegProfEngQld). |
| AO2.3  Development provides a retaining wall finish that presents to adjoining land that is maintenance free if the [setback](Definitions.docx#Setback) is less than 750mm from the boundary. |
| AO2.4  Development for filling only uses clean fill that does not include any construction rubble, debris, weed seed or viable parts of plant species listed as an undesirable plant species in the Planting species planning scheme policy . |
| PO3  Development ensures that a rock anchor is designed and constructed to be fit for purpose. | AO3  Development ensures that a rock anchor:   1. is constructed in accordance with the standards in the [Infrastructure design planning scheme policy](InfrastructureDesignPSP.docx); 2. where it extends beyond the property boundary, is supported by a letter of consent from the adjoining land and building owners. |
| PO4  Development protects all services and public utilities. | AO4  Development protects services and public utilities and ensures that any alteration or relocation of services or public utilities meets the standard design specifications of the responsible service authorities. |
| PO5  Development provides surface and sub-surface drainage to prevent water seepage, concentration of run-off or ponding of stormwater on adjacent land. | AO5  Development ensures all flows and subsoil drainage are directed to a lawful point of discharge of a surface water diversion drain, including to the top or toe of a retaining wall in accordance with the stormwater drainage section of the [Infrastructure design planning scheme policy](InfrastructureDesignPSP.docx). |
| PO6  Development ensures that the design and construction of all open drainage works is undertaken in accordance with natural channel design principles, being the development of a stormwater conveyance system for major flows, by using a vegetated open channel or drain that approximates the features and functions of a natural waterway to enhance or improve riparian values of those stormwater conveyance systems.  Editor’s note—Guidance on natural channel design principles can be found in the Council’s publication [Natural channel design guidelines](http://www.brisbane.qld.gov.au/planning-building/planning-guidelines-and-tools/guidelines/subdivision-development-guidelines/technical-documents/index.htm#natural). | AO6  Filling or excavation does not involve the construction of open drainage. |
| PO7  Development for [filling or excavation](Definitions.docx#FillOrExc):   1. does not degrade water quality or adversely affect environmental values in receiving waters; 2. ensures site sediment and erosion control standards are best practice. | AO7.1  Development for [filling or excavation](file:///\\ad\groups\CPS\CPED\CPBranch\C_PConf\PUBLICATIONS_Sandbox\2017_07_Planning%20Act_Amendment\Amended%20Docs_wTC\Part%209%20-%20Development%20codes\Definitions.docx#FillOrExc) provides water quality treatment that complies with the stormwater drainage section of the [Infrastructure design planning scheme policy](InfrastructureDesignPSP.docx). |
| AO7.2  Development provides erosion and sediment control standards that are in accordance with the stormwater drainage section of the [Infrastructure design planning scheme policy](InfrastructureDesignPSP.docx). |
| PO8  Development for [filling or excavation](Definitions.docx#FillOrExc) is conducted such that adverse impacts at a sensitive use due to noise and dust are prevented or minimised.  Note—A noise and dust impact management plan prepared in accordance with the [Management plans planning scheme policy](ManagementPSP.docx) can assist in demonstrating achievement of this performance outcome. | AO8.1  Development ensures that no dust emissions extend beyond the boundary of the site, including dust from construction vehicles entering and leaving the site. |
| AO8.2  Development for [filling or excavation](Definitions.docx#FillOrExc) activity only occurs between the hours of 6:30am and 6:30pm Monday to Saturday, excluding public holidays. |
| PO9  Development ensures that vibration generated by the [filling or excavation](Definitions.docx#FillOrExc) operation does not exceed the vibration criteria in [Table 9.4.3.3.B](FillExcavationCode.docx#Table9433b), [Table 9.4.3.3.C](FillExcavationCode.docx#Table9433c), [Table 9.4.3.3.D](FillExcavationCode.docx#Table9433d) and [Table 9.4.3.3.E](FillExcavationCode.docx#Table9433e).  Note—A noise management report prepared in accordance with the [Noise impact assessment planning scheme policy](NoiseImpactAssessmentPSP.docx) can assist in demonstrating achievement of this performance outcome. | AO9  Development involving [filling or excavation](Definitions.docx#FillOrExc) does not cause a ground-borne vibration beyond the boundary of the site. |
| PO10  Development ensures that heavy trucks hauling material to and from the site do not affect the [amenity](Definitions.docx#Amenity) of established areas and limits environmental nuisance impact on adjacent land. | AO10  Development ensures that heavy trucks hauling material to and from the site:   1. occur for a maximum of 3 weeks; 2. use a major road to access the site; 3. only use a minor road for the shortest-most-direct route that has the least amount of environmental nuisance if there is no major road alternative. |
| PO11  Development for filling or excavation protects the environment and community health and wellbeing from exposure to contaminated land and contaminated material. | AO11  Development does not involve:   1. excavation on land previously occupied by a notifiable activity or on land listed on the [Environmental Management Register](http://www.ehp.qld.gov.au/land/contaminated-land/#environmental_management_register) or the [Contaminated Land Register](http://www.ehp.qld.gov.au/land/contaminated-land/#environmental_management_register); 2. filling with material containing a contaminant. |
| PO12  Development provides for:   1. landscaping for water conservation purposes; 2. water sensitive urban design measures which are employed within the landscape design to maximise stormwater use and to reduce any adverse impacts on the landscape; 3. stormwater harvesting to be maximised and any adverse impacts of stormwater minimised. | AO12.1  Development provides landscaping which is designed using the standards in the [Landscape design guidelines for water conservation planning scheme policy.](LandscapeDesignWaterConservPSP.docx) |
| AO12.2  Development ensures that the design and requirements for irrigation are in compliance with the standards in the [Landscape design guidelines for water conservation planning scheme policy.](LandscapeDesignWaterConservPSP.docx) |
| AO12.3  Development provides areas of pavement, turf and mulched garden beds which are drained.  Note—This may be achieved through the provision and/or treatment of swales, spoon drains, field gullies, sub-surface drainage and stormwater connections. |
| PO13  Development ensures cutting and filling for the development of canals or artificial waterways avoids adverse impacts on coastal resources and processes. | AO13  Development does not involve the creation of canals or artificial waterways. |

Table 9.4.3.3.B— Recommended intermittent vibration levels for cosmetic damage

|  |  |  |  |
| --- | --- | --- | --- |
| Type of building | Peak particle velocity (mm/s) | | |
| Reinforced or framed structures; industrial and heavy commercial buildings | 50mm/s at 4Hz and above | | |
| Unreinforced or light-framed structures; residential or light-commercial type buildings | Below 4Hz | 4Hz to 15Hz | 15Hz and above |
| 0.6mm/s | 15mm/s at 4Hz increasing to  20mm/s at 15Hz | 20mm/s at 15Hz increasing to  50mm/s at 40Hz and above |

Table 9.4.3.3.C— Recommended blasting vibration levels for human comfort

|  |  |  |
| --- | --- | --- |
| Type of building | Type of blasting operations | Peak component particle velocity (mm/s) |
| Residences, schools, educational institutions and places of worship | Operation blasting longer than 12 months or more than 20 blasts | 5mm/s for 95% blasts per year 10mm/s maximum unless agreement is reached with the occupier that a higher limit may apply |
| Residences, schools, educational institutions and places of worship | Operations lasting for less than 12 months or less than 20 blasts | 10mm/s maximum unless agreement is reached with the occupier that a higher limit may apply |
| Industry or commercial premises | All blasting | 25 mm/s maximum unless agreement is reached with the occupier that a higher limit may apply. For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that do not adversely affect the equipment operation. |

Table 9.4.3.3.D— Recommended levels for continuous and impulsive vibration acceleration (m/s2) 1–80Hz for human comfort

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Location | Assessment period(1) | Preferred values(3) | | Maximum values(3) | |
| Continuous vibration |  | z-axis | x and y axes | z-axis | x and y axes |
| Critical areas(2) | Day or night | 0.005 m/s2 | 0.0036 m/s2 | 0.01 m/s2 | 0.0072 m/s2 |
| Residences | Day | 0.01 m/s2 | 0.0071 m/s2 | 0.02 m/s2 | 0.014 m/s2 |
| - | Night | 0.007 m/s2 | 0.005 m/s2 | 0.014 m/s2 | 0.01 m/s2 |
| Offices, schools, educational institutions and places of worship | Day or night | 0.02 m/s2 | 0.014 m/s2 | 0.04 m/s2 | 0.028 m/s2 |
| Workshops | Day or night | 0.04 m/s2 | 0.029 m/s2 | 0.08 m/s2 | 0.058 m/s2 |
| Impulsive vibration |  | | | | |
| Critical areas | Day or night | 0.005 m/s2 | 0.0036 m/s2 | 0.01 m/s2 | 0.0072 m/s2 |
| Residences | Day | 0.3 m/s2 | 0.21 m/s2 | 0.6 m/s2 | 0.42 m/s2 |
| - | Night | 0.1 m/s2 | 0.071 m/s2 | 0.2 m/s2 | 0.14 m/s2 |
| Offices, schools, educational institutions and places of worship | Day or night | 0.64 m/s2 | 0.46 m/s2 | 1.28 m/s2 | 0.92 m/s2 |
| Workshops | Day or night | 0.64 m/s2 | 0.46 m/s2 | 1.28 m/s2 | 0.92 m/s2 |

Note—

(1) Day is 7am to 10pm and night is 10pm to 7am.

(2) Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.

(3) Situations exist where vibration above the preferred values can be acceptable, particularly for temporary or short-term events. Further guidance is given in the [Noise impact assessment planning scheme policy.](NoiseImpactAssessmentPSP.docx)

Table 9.4.3.3.E— Recommended vibration dose values for intermittent vibration (m/s1.75) for human comfort

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Location | Daytime(1) | | Night time(1) | |
| Preferred value | Maximum value | Preferred value(3) | Maximum value(3) |
| Critical areas(2) | 0.1 m/s1.75 | 0.2 m/s1.75 | 0.1 m/s1.75 | 0.2 m/s1.75 |
| Residences | 0.2 m/s1.75 | 0.4 m/s1.75 | 0.13 m/s1.75 | 0.26 m/s1.75 |
| Offices, schools, educational institutions and places of worship | 0.4 m/s1.75 | 0.8 m/s1.75 | 0.4 m/s1.75 | 0.8 m/s1.75 |
| Workshops | 0.8 m/s1.75 | 1.6 m/s1.75 | 0.8 m/s1.75 | 1.6 m/s1.75 |

Note—

(1) Day is 7am to 10pm and night is 10pm to 7am.

(2) Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.

(3) Situations exist where vibration above the preferred values can be acceptable, particularly for temporary or short-term events. Further guidance is given in the [Noise impact assessment planning scheme policy.](NoiseImpactAssessmentPSP.docx)