HIGHWAYS AGENCY

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A14 Cambridge to Huntingdon improvement scheme

Environmental Statement

Appendices

Appendix 12.2: Soil management strategy

Date: December 2014

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1 Introduction and overview

1.1 Introduction and overview

1.1.1 The intention of this document is to consolidate the soil management and mitigation strategies proposed in the *Environmental Statement (ES)*, with particular regard to topsoil. This document is intended to support the *Code of Construction Practice* (*CoCP*) in *Appendix 20.2*, as it provides greater detail on the management of topsoil resources expected of construction contractors.

1.1.2 The aim of the soil management strategy (SMS) is to ensure that as much topsoil as practicable is retained in good condition for restoration to agriculture and for re-use within the landscaping proposals for the scheme. The SMS also aims to ensure that land disturbed by temporary construction impacts, including borrow pit works, is re-instated to a suitable standard appropriate to the afteruse.

1.1.3 Although this SMS is focussed on the management of the scheme's topsoil resource, the principles for managing the topsoil would be extended to other soil types, such as subsoil, encountered by the scheme. This SMS makes a note of the management strategies that could be applied to all soil types.

1.1.4 Since a large part of the scheme is underlain or potentially underlain by best and most versatile agricultural land, the loss of such land is a potential adverse effect of the scheme. It is therefore important that the SMS is adopted by the construction contractors to reduce the potentially adverse impact of the scheme on the soil resource.

1.1.5 As the detailed design of the scheme is progressed, this document would be supported by the following information:

- maps showing the areas to be stripped and left in situ;
- detailed methodology for stripping, stockpiling, re-spreading and ameliorating the top and subsoil;
- details of the location of soil stockpiles and content, such as topsoil type A or subsoil type B and schedules of volumes for each material;
- details of the anticipated after-use for each soil whether topsoil to be used on site or sold off-site;
- details of the subsoil to be retained for landscape areas, used as structural fill or for topsoil manufacture; and
- identification of the persons responsible for supervising soil management.

1.1.6 There are limited opportunities for the scheme to avoid affecting high quality agricultural land and soil. The majority of the surrounding landscape within Cambridgeshire supports valuable agricultural land. The implementation of this SMS would reduce the risk of losing, damaging and contaminating valuable soil resources during construction.

1.2 Summary of the scheme

1.2.1 The details of the scheme are provided in *Chapter 3 of the ES*. A full description of the soil and geology along the scheme, including soil contamination aspects, is presented in *Chapter 12 of the ES*. The following provides a summary of the development in relation to the soil environment.

1.2.2 The majority of the scheme would cross grade 2 and 3 agricultural land, which is within the best and most versatile land category, as illustrated on *Figure 16.1*. As a result, the scheme, including the associated borrow pits, would result in the loss of land and topsoil which is valuable to agricultural production. The impact of the scheme on agricultural land and farms is presented in *Chapter 16 of the ES*.

1.2.3 The scheme would require large volumes of material and may generate significant quantities of topsoil. Quantities stated in this strategy are based upon information in C*hapter 13 of the ES* and are consistent with the best available information at the preliminary design stage.

1.3 Regulations and guidance

1.3.1 Three guidance documents for the protection of all soil types on construction sites were used to guide the content of this SMS, including:

- *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites* (Defra, 2009a);
- *Safeguarding our Soils: A strategy for England* (Defra, 2009b); and
- *British Standard 3882:2007 - Specification for topsoil and requirements for use*.

1.3.2 A list of regulations and guidance relating to soil contamination is presented and discussed in *Chapter 12 of the ES*. Soil contamination resulting from historic and current potentially contaminative land uses is not discussed further within this SMS.

1.4 Key impacts

1.4.1 The scheme would have a potentially significant impact on the soil resources of the area due to the large scale construction works. The construction works and associated impacts are typical of a highway development of this scale. The main activities posing a potential impact to soil resources include:

- soil excavation and borrow pits;
- storage of soil;
- compaction under working areas; and
- restoration and landscaping scheme.

2 Soil management strategy

2.1.1 Soil is a valuable resource which is central to the health and correct functioning of the natural environment. The protection of soil is a key consideration for the construction and operation of any development, as associated activities may have a permanent negative impact on this resource. Through the consideration of the soil resources in the design of a development, it is possible to minimise or remove the potential impact to the soil resources. This SMS sets out the measures proposed to reduce the impact of the scheme on local soil resources.

2.2 General management of soil resources

2.2.1 The soil resources generated by excavation activities would be re-used where practicable either to form embankments (subsoil) or for landscaping (topsoil). Where any soil is likely to be temporarily impacted, it would also be stripped and stockpiled to prevent excessive damage and degradation. Once construction works are complete, the soil that has been stripped from areas of temporary use (construction compounds and haul routes) would be returned and restored. Topsoil and subsoil removed from areas of the scheme intended to be returned to agriculture (for example borrow pit 5) would be stored locally to those areas and used in the land restoration.

2.2.2 As described in *Chapter 13 of the ES*, subject to their properties meeting the engineering requirements, the mineral resources generated by excavation activities for the scheme would be re-used for construction within the scheme. Material which does not meet engineering requirements for construction would be re-used for restoration of the borrow pits, subject to it meeting environmental 'suitable for use' criteria and geotechnical requirements.

2.2.3 The *CoCP* includes a number of general management measures that would be adopted to ensure that soil resources are not lost or damaged due to cross-contamination, poor storage, or poor handling procedures. These measures would include:

- ensuring that there is sufficient space to stockpile all soil, regardless of type, that would remain on site;
- investigating beneficial off-site uses for all soil types that would be surplus to requirement;
- planning site works so that soil stripping and replacement could be undertaken in summer months in order to reduce likelihood of compaction, and other problems due to wet conditions;
- avoiding stripping soil during or after heavy rainfall or when there are pools of water on the surface;
- clearly marking out all haul routes and areas to be protected from construction activity, ensuring that the width of haul roads is kept to a minimum to protect as much soil in situ as possible;

- avoiding stripping topsoil to a depth that would result in subsoil being incorporated, thereby causing contamination and reducing fertility; and
- avoiding stripping soil of different quality and composition (such as, clay with sand), which would cause cross-contamination of the separate soil types.

2.3 Soil excavation and borrow pits

2.3.1 Due to the vertical alignment of the scheme, it is not possible to achieve a cut/fill balance. Therefore additional structural material such as gravel, soil and sand would be required to construct the scheme. To reduce the transportation distances between the source and construction site, as much material as practicable would be sourced locally. A series of local borrow pits is proposed as part of the scheme.

2.3.2 As there is likely to be a limited amount of material deemed unsuitable for engineering construction and thus available to restore the borrow pits, most will remain as excavations, and the majority of these would be water filled due to the locally high water table and permeable strata. Borrow pit 5 would be restored to agriculture as it is well above the local water table.

2.3.3 In addition to the mineral resource that would be won from the borrow pits there would also be significant quantities of top and subsoil removed from the pit areas. The bulk of the subsoil would be used in pit restoration, but it is unlikely that all the topsoil would be required for this due to its inherently high fertility. Some topsoil would be used in landscaping of the scheme, but it is likely that there would be a significant surplus overall.

2.3.4 In general, the removal of topsoil from the areas to be disturbed by the scheme would reduce the amount of sterilisation of soil and allow the topsoil to be reused at other locations. However, the volume of topsoil to be used in the landscaping/formation of embankments would result in the loss of topsoil that could be used for agricultural purposes.

2.3.5 The volume of topsoil that would be required in the landscaping scheme would be less than that won from the excavation of the main works areas and borrow pits. This would result in a surplus of topsoil. Any surplus of topsoil would be at risk of being 'lost' if it were to be treated as a waste or disposed of as a waste product. As discussed in *Chapter 12 of the ES*, any material used for the scheme, including the re-instatement of borrow pits would be proven 'suitable for use'. Material would be deposited under either *The Environmental Permitting (England and Wales) Regulations 2010* or the *CL:AIRE Definition of Waste: Development Industry Code of Practice* (CL:AIRE, 2011).

2.3.6 Extraction, storage and use of topsoil could affect the properties of the topsoil. This could result in the topsoil being compacted, with resultant loss of soils structure, organic material and nutrients leaching out of the topsoil, or contamination of the topsoil.

2.3.7 Further to this, the handling of the topsoil could damage the physical conditions of the topsoil. The handling of topsoil is discussed below.

Anticipated volumes

2.3.8 The volumes of topsoil that would be won from the excavation of the cuttings and from the borrow pits is shown in *Table 2.1*. It is anticipated that there would be a surplus of topsoil, as not all topsoil would be reused onsite for landscaping. Local recipients, such as local landowners, would be identified where possible to receive the excess topsoil for re-use.

Table 2.1: Anticipated volumes of topsoil (million m^3)

Source	Volume of topsoil strip	Topsoil reused in landscaping and restoration	Surplus topsoil
Earthworks including cuttings and floodplain compensation areas	1.44	0.825	
Borrow pits	0.51	0.194	
Total	1.95	1.02	0.944

2.3.9 *Chapter 12 of the ES* describes soil which may be unacceptable for use as a result of contamination from historic or current potentially contaminative land use.

Proposed mitigation

2.3.10 The proposed mitigation would follow the Defra guidelines (2009a and 2009b) and *British Standard 3882:2007* relating to soil management. The guidance establishes best practice for the stripping of topsoil, and subsoil, to reduce the damage of soil and allow for the segregated storage of the soil prior to re-spreading.

2.3.11 Local landowners may be able to re-use the surplus topsoil to raise low spots in fields where land is less productive than surrounding agricultural land, where this is not in a designated floodplain. Further consultation would be carried out with local landowners to explore this possible solution. The environmental principle to be applied to topsoil re-use is to minimise the distance that topsoil is moved from its source. The option for the using the surplus by local land owners would be progressed in consultation with relevant landowners and only where there is no worsening of the overall environmental impact.

Management approach

2.3.12 The management and use of surplus materials and waste would be undertaken in accordance with the waste hierarchy, outlined in the *Waste (England and Wales) Regulations 2011*.

2.3.13 A detailed stripping plan would be prepared, which would include details about the depth of the soil layers to be stripped and the onsite haul routes. A record of the properties of the stripped soil, such as source location, chemical properties, organic material content, and stripping details, would be kept with each soil stockpile. A copy of this record should be kept with the soil during transportation to, and storage at, other sites. This would allow the soil's source and properties to be known at all stages of the scheme. Such knowledge would allow the most effective future use of the soil.

2.4 Storage of soil

2.4.1 All excavated soil would be transported and stored for re-use, or removed off-site if not required for landscaping and restoration. Stockpiling could cause a range of impacts on the environment, as described below.

Impacts

2.4.2 The storage of soil resources could have a number of impacts on the stripped soil resources and surrounding environment. These impacts would be dependent on the method of storing the soil and the duration for which the soil is stockpiled. Impacts to soil could include:

- Damage to the chemical and biological condition of the soil. When soil is stored for longer than two weeks, the soil in the core of the stockpile becomes anaerobic and temporary chemical and biological changes would take place;
- Damage to the physical condition of the soil, which could occur during the handling of the soil whilst stockpiling the soil;
- Compaction could occur as the soil is stacked, should machinery be used on the stockpile;
- Self-compaction could occur where the height of the stockpile is too great or the soil is wet, and therefore heavier; and
- Erosion of soil could occur, resulting in the loss of resource and causing pollution to the local environment, particularly during wet weather events.

2.4.3 Although all handling of soil would affect its physical properties, the greatest effect could occur during the stockpiling of the soil. This damage could be irreversible.

2.4.4 The stockpiling method would affect the propensity for the soil to be damaged during the handling and stockpiling phase. Wetter, heavier soil is more likely to become compacted and anaerobic conditions would then occur in the centre of the stockpile.

2.4.5 Some locations for stockpiling are located within flood zone 3 (categorised as having the risk of flooding on average as once in every 100 years). These locations have three potential impacts:

- If a flood event occurs stockpiles at this location would be at risk of becoming waterlogged;
- The flood waters could erode stockpiles at this location; and
- Stockpiling in this area would reduce the capacity of flood zone 3b and could impede the flow of the flood waters.

Anticipated volumes

2.4.6 It is anticipated that the soil excavated from the cuttings and borrow pits would be stockpiled for various durations prior to re-use. However, over the construction phase, the total volume of material that would be stockpiled for the scheme would be 8.4 million m^3 (2.6 million m^3 from cuttings and floodplain compensation areas and 5.8 million m^3 from the borrow pits). This has been calculated as a likely worst case scenario from the information available at the preliminary design stage of the scheme. It is not anticipated that this volume of soil would all be stored at the same time.

Proposed mitigation

2.4.7 The *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites* (Defra, 2009a) sets out stockpiling methods that would be implemented. The guidance sets out two methodologies that would depend on the soil resources' moisture, content and consistency.

2.4.8 The location and protection of the stockpiles would be consistent with the Defra guidance to ensure that the soil would not degrade nor cause environmental impacts due to erosion. To prevent the cross contamination of different soil types, the stockpiles would only include soil of a similar source and with the same chemical/biological/physical properties.

2.4.9 The duration that the soil would be stockpiled for would be minimised wherever possible to reduce the impacts from compaction and the reduction of oxygen in the soil. Although negative impacts would occur after two weeks, the soil could be stored for up to one year before irreversible impacts are likely to occur, therefore soil would not be stockpiled for more than one year where practicable. If the soil is to be kept in stockpiles in excess of one year, the soil in the stockpile would be rotated to allow aeration of the soil and avoid the effect of long-term compaction.

2.4.10 Soil stockpiled for longer than three months would be seeded with an agricultural grass seed mix and maintained by regular cutting to ensure weed growth is minimised.

2.4.11 To mitigate the potential impacts of the stockpiles in flood zone 3b, the soil resources in these stockpiles would be re-utilised as a priority to minimise the length of time that the stockpiles remain in the flood zone. Soil in these stockpiles not required for early use in restoration of the scheme, would be reused off-site as soon as practicable.

Management approach

2.4.12 Management measures would ensure that soil is not excavated and stockpiled in excess of one year. Wherever possible the duration that the soil is stockpiled for would be as short as possible. Prior to the excavation of soil, a handling note would be raised for the soil resource that would identify the likely use and final destination of the soil. The handling note would include details of the soil source and composition.

2.4.13 The detailed design for the scheme would include the phasing details of the excavation and subsequent reuse of the soil resource.

2.5 Compaction

2.5.1 Compaction mainly occurs as a result of heavy vehicles and machinery moving over soil resources that have not been stripped. In addition, compaction could occur on soil that has been stripped and stockpiled due to the handling procedures and access to the stockpiles.

Impacts

2.5.2 Areas of subsoil resource that are left in situ during the construction works, such as haul routes and construction compounds, may be subjected to compaction due to the large weights that these soil resources would be expected to carry.

2.5.3 Compacted soil reduces the agricultural productivity of land, which would be restored to agricultural use. The compacted soil also has lower water infiltration rates, thus increasing the flood risk due to higher levels of run off.

Anticipated volumes

2.5.4 The volume of soil resources potentially impacted would not be known until the detailed design phase, however all the topsoil/subsoil resources that are to be stripped and stockpiled as part of the scheme could be at risk (up to 2.4 million m^3). In addition to the stockpiled soil, soil resources along the route (36 km) of the scheme could be at risk of compaction due to operations vehicles exceeding the limits of the haul routes onto unstripped soil resources. Through the implementation of mitigation measures, the volume of soil resources that may be impacted would be reduced to an acceptable level.

Mitigation

2.5.5 The *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites* (Defra, 2009a) sets out how to relieve soil resources that are compacted during the construction phase. Once an area is no longer being used, or is ready for restoration, the soil resources would be loosened to remove the compaction. The earlier the soil is loosened, the less their physical properties are damaged and the process of recovery could begin. However, if the soil resource is subject to severe compaction it may not be possible to restore the soil resources' properties back to those pre-compaction.

2.5.6 Areas that are to be subject to compaction would have their topsoil removed and stored. Retained subsoil layers would be protected with geotextile prior to the laying of stone surfacing.

Management approach

2.5.7 The removal of topsoil from areas identified as being at risk from compaction would be undertaken during the preparation of the construction area, as detailed in the sections above. Excavation would normally be by 360 degree excavator.

2.6 Restoration schemes

2.6.1 Although the stockpiling and handling of soil resources would invariably damage the physical properties of the material, the potential quality of the soil depends on its treatment and use during restoration. With the correct treatment of soil resources during restoration and landscaping, limited damage to the soil can normally be mitigated to a large extent.

Impacts

2.6.2 The physical properties of all the soil types could be damaged during the re-spreading of stockpiled soil resources, if the soil is over-compacted and not aerated during the use of the soil resources in the landscaping of the scheme. The greatest damage is usually caused during the excavation and storage of soil resources, however, the use of soil resources in earthworks and landscaping could add to damage to the soil resources that may have already occurred in previous phases.

2.6.3 The main impacts on topsoil during its use in restoration schemes are due to waterlogging and reduction in the air pockets in the topsoil. This results in the topsoil not being able to support planting and could lead to the localised flooding of an area. Construction and landscaping works could impact the topsoil in the following ways:

- over compaction during the preparation and grading of landscape features. During the construction of earthworks the compaction of the surface to form a stable structure could result in the topsoil being over-compacted. This could reduce the air pockets in the topsoil and adversely affect plant roots resulting in poor growth or failure of planting;
- compaction due to vehicles running over finished areas. The localised movement of vehicles over earthworks and landscape areas could cause localised compaction. This could result in the disturbance of sub-surface drainage routes through the topsoil and subsoil and create runoff routes on the surface. The surface runoff routes could result in localised erosion to the surface soil;
- waterlogging due to ineffective drainage measures. Waterlogging could occur due to over-compaction of the topsoil, and would also occur if the surface and sub-surface drainage in earthworks and landscaped areas is not effective. Waterlogging could result in the deterioration of the topsoil and subsequent failure of planting;
- creating anaerobic conditions due to the topsoil layer being too deep. Due to the organic make-up of topsoil, oxygen is required to allow for the breakdown of organic material. Once the depth of topsoil exceeds 400mm, the oxygen demand of the soil exceeds that of natural percolation of air; this can result in anaerobic conditions, which would be detrimental to plant growth; and
- clumping of topsoil due to wet topsoil being stockpiled If the topsoil is not broken up during re-spreading, the clumps of topsoil would hinder root growth due to its compacted structure and would lead to waterlogged and/or anaerobic conditions.

Anticipated soil volumes

2.6.4 The volume of soil resources potentially impacted by the scheme would not be confirmed until the detailed design phase. However, as an estimate the scheme would require landscaping along its 36 km length as well as the restoration of some agricultural land. The volume of topsoil that is to be used in the scheme is 1.02 million m^3, which could be impacted as set out above.

Mitigation

2.6.5 The correct handling of the topsoil during the restoration depends on the use of the topsoil when they are dry or slightly moist, the use of suitable machinery, and the minimisation of handling.

2.6.6 The *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites* (Defra, 2009a) sets out the best practice methods for the handling of soil resources during the restoration of a construction site. This process is known as the 'loose tipping method'. This method also requires that the surface receiving the soil is loosened prior to the application of the subsoil and/or topsoil, and compaction by machinery is kept to a minimum. This has a two-fold purpose: it prevents a solid border between the soil layers, which may hinder drainage; and it remediates the compaction of the receiving surface which may have occurred during the construction phase. The soil resources are then loosely tipped on to the areas and smoothed over by an excavator, which removes the need for machinery to traverse the subsoil and potential for compaction.

2.6.7 As the topsoil is placed, the thickness of the topsoil layer must be observed. The landscaping strategy generally would require a topsoil depth of 300mm in planting plots, with a reduced depth in areas to be seeded. Areas requiring greater depths of landscape fill would use subsoil below 400mm depth,

2.6.8 The placement of topsoil would comply with the Defra guidelines and would only occur after the topsoil is aerated and not during periods of adverse weather.

Management approach

2.6.9 Management measures based on the *CoCP* and works information would ensure that the landscaping and planting schemes follow the Defra guidance regarding required soil depths and correct zoning. The restoration scheme would set out acceptable methods of placing soil and aftercare to ensure that soils do not become compacted or anaerobic.

3 Summary table of impacts and mitigation

3.1.1 *Table 3.1* provides a summary of the potential impacts of the construction of the scheme on soil resources, as described in Section 1 and 2. *Table 3.1* also provides a summary of proposed mitigation measures. The management actions are secured with the requirement for a detailed soil management strategy included in the *Register of Environmental Actions and Commitments,* and also the requirements of the *Code of Construction Practice* (itself secured as a requirement of the DCO).

Table 3.1: Summary of potential impacts on soil resources and proposed mitigation measures

Construction activity	Potential impact	Proposed mitigation	Management action
General management of the soil resources			
Storage of soil	Unnecessary off-site exportation of soil	• Ensure that there is sufficient space on site to stockpile all soil resources to be used. Different soil types to be stored separately.	*CoCP*
Excavation of surplus soil	Loss of surplus soil	• Investigate beneficial off-site uses for all soil materials that are surplus to requirement	*CoCP*
Handling soil	Compaction, and other problems due to wet conditions	• Plan site works so that soil stripping and replacement could be undertaken in summer months	*CoCP*
Vehicle movements	Vehicular movements off designated haul routes	• Mark out haul routes	*CoCP*
Handling soil	Cross-contamination of different soil types	• Avoid stripping topsoil too deeply so that subsoil becomes incorporated	*CoCP*
Excavation and stripping of soil			
Excavating soil from borrow pits	Sterilisation of soil from agricultural use	• Strip soil from areas that would be sterilised by the scheme or construction works.	Stripping Plan
Stripping soil	Contaminating soil type	• Avoid stripping topsoil too deeply so that subsoil becomes incorporated • Segregate stockpiles	Stripping Plan

Construction activity	Potential impact	Proposed mitigation	Management action
Handling soil	Damaging soil by handling whilst they are wet	• Undertake stripping in favourable/dry weather conditions	Stripping Plan
Excavating soil from borrow pits	Surplus topsoil	• Find alternative use for the topsoil with local landowners	Consultation Plan
Storage of soil			
Excessive depth of stockpiles and prolonged storage of soil	Damage to the biological condition of the soil due to anaerobism	• Ensure soils are not stockpiled in excess of one year prior to use • Limit depths of soil or rotate soil. • Ensure soils are dry/slightly moist when storing • Manage long-term soil stores by seeding and cutting vegetation • Reuse/export excess soil once it is clear it is not required on the scheme	Stripping Plan *CoCP*
Excessive depth of stockpiles and prolonged storage of soil	Damage to the chemical condition of the soil	• Ensure soils are not stockpiled in excess of one year prior to use • Limit depths of soil or rotate soil • Ensure soils are dry/slightly moist when storing • Manage long-term soil stores by seeding and cutting vegetation • Reuse/export excess soil once it is clear it is not required on the scheme	*CoCP*
Excessive depth of stockpiles and prolonged storage of soil	Damage to the physical condition of the soil	• Limit the height of the stockpiles to prevent self-compaction. • Limit topsoil stores to maximum 2m high	*CoCP*
Handling of soil	Damage to the physical condition of the soil	• Reduce handling of soil • Avoid handling soil in adverse weather conditions • Ensure soils are dry/slightly moist when storing	*CoCP*
Not segregating soil of different types/sources.	Contamination of the stockpiles	• Segregate stockpiles • Ensure the stockpiles are clearly defined	Preparation of handling method statement *CoCP*
Leaving the stockpiles unprotected from the elements	Erosion of soil	• Reduce the footprint of stockpiles in areas susceptible to flooding • Bund stockpiles to allow soil in runoff to be recovered	*CoCP*

Construction activity	Potential impact	Proposed mitigation	Management action
Compaction			
Leaving soil in situ on haul routes and working areas	Compaction	• Ensure that all working areas and haul routes are stripped prior to use	Stripping Plan *CoCP* Works Information
Not restoring areas of compacted soil	Reduction in agricultural output	• Loosen all areas of compacted soil during the restoration phase at the end of the construction phase	Restoration Plan Planting scheme Works Information
Restoration			
Placement of soil	Compaction	• Implement the loose tipping method • Avoid mechanical compaction of the soil	Restoration Plan *CoCP* Works Information
Placement of soil	Anaerobic conditions	• Avoid the placement of topsoil exceeding 400mm in depth	Restoration Plan *CoCP* Landscaping strategy Works Information
Placement of soil	Damaging chemical/ biological/ physical properties	• Do not handle soil during or after adverse weather conditions	*CoCP*
Placement of soil	Clumping of soil	• Avoid placing wet soil • Do not undertake activities during or after adverse weather conditions	Restoration Plan *CoCP*
Vehicle movements	Compaction	• Prevent vehicles from access the restored areas • Implement the loose tipping method	Restoration Plan *CoCP*
Ineffective drainage	Waterlogging	• Ensure the receiving surface is loosened/subsoiled	Restoration Plan *CoCP* Works information

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