SOIL RECONSTRUCTION – MOTIVATION AND GENERAL PRINCIPLES

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SUMMARY

The restoring ecological structure and dynamics to an earlier state (presumably less disturbed by humans) generally and soil restoration particularly, became desiderate worldwide. Because it is a non-renewable resource it should be utilised in a sustainable manner. Good practice regarding soil removal and reinstatement requires that soils should be returned as closely as possible to their original state after disturbance. The primary objective of soil restoration is to minimise the degradation of the resource and to promote the reestablishment of a functional plant - soil system for the long-term. Failure to protect soils during disturbance results in their degradation, with consequent environmental impacts both on-site and off-site through: soil erosion, loss of soil organic matter and nutrients, leading to a decline in soil fertility; soil compaction leading to waterlogging and destruction of soil structure (important for root establishment); loss of biological activity and diversity due to poor storage conditions and loss of organic matter. The main principles of soil restoration includes the followings: Recognising the problems which can arise during removal, storage and reinstatement, either due to the sensitivity of the soils or poor management of the soil resource. Ensuring that soils are stripped according to horizon, and the horizons are replaced in order, can lead to avoid the soil truncation, inversion and mixing of subsoil and topsoil. Avoiding damage to soil structure by compaction, which has significant long-term effects on both soil function and establishment of vegetation. The best practice is to avoid compaction but remedial action can also be taken to alleviate problems once they arise. When there may be insufficient soil for restoration due to the nature of the development project and in accidental soil loss. It is necessary in these exceptional cases to consider importing soils or using soil forming materials on-site. Successful restoration of soil and vegetation requires a degree of understanding of the role and importance of soil in terrestrial habitats, not only for sustaining vegetation, but also for its environmental functions such as storage and filtration of water. Soil restoration and reinstatement are integral to sustainable land use planning and are considered as part of most large-scale developments. The general principles and guidelines in this advisory note can also be applied to ensure successful restoration of soil for nature conservation. There is a need for a greater understanding of soil properties which are essential for supporting habitats of conservation value, particularly the tolerance and threshold values for soil physical and chemical properties for specific habitats.

BIBLIOGRAPHY