

Session 2

Site Assessment and E&SC Planning

1

Centre for Environmental Training cet

Plan Preparation

- What sort of plan do I require?
- Plan may comprise:
 - Drawing(s) to show layout of works
 - Commentary as annotated sketches or report
- Disturbed area <250m²; no formal plan required
- Disturbed area >250m² and <2,500m² require an ESCP
- Disturbed area >2,500m² require an SWMP

2

Centre for Environmental Training cet

Examples

- Disturbed area <250m²: house extension, garage, small driveway
- Disturbed area 250-2,500m²: most houses, commercial developments, small subdivisions, small medium/high density housing, small civil works
- Disturbed area >2,500m²: large subdivisions, large medium/high density housing, large civil works

3

Centre for Environmental Training cet

ESCP or SWMP?

- Chapter 2 of the Blue Book describes the difference between an ESCP and a SWMP
- ESCP:
 - Site plan to show Best Management Practices (BMPs)
 - Standard Drawings from Blue Book
- SWMP, in addition, requires:
 - Supporting calculations for sediment basins and structures
 - Details of erosion and sediment controls
 - Inspection and maintenance notes
 - Stabilisation requirements

4

Centre for Environmental Training cet

ESCP

- On Plan:
- Boundaries, vegetation and drainage systems
 - Slope, grade or direction of fall
- Measures including:
- Clean water diversion
 - Site access controls (barrier fence)
 - Stabilised access
 - Sediment fence
 - Designated stockpile locations
 - Waste disposal facilities/storage

5

Centre for Environmental Training cet

Common BMPs



6

Centre for Environmental Training cet

SWMP

- Applies same principles as ESCP
- For larger projects with:
 - Greater areas of disturbance
 - Higher pollution risk



Centre for Environmental Training cet

7

SWMP

- Trigger: Is the area of disturbance >2,500m²?
- Undertake constraints analysis (BB Chapter 3)
 - Waterfront / riparian land or flood prone?
- Erosion hazard assessment
 - Run RUSLE and determine Soil Loss Class
- Consider timing restrictions?
- Batter (grade) limitations required?
- Sediment basin test (BB Chapter 6.3.2)
- Determine type of basin required (C, F or D)
- Prepare SWMP to include erosion and sediment controls, maintenance notes, stabilisation requirements and standard drawings

8

Centre for Environmental Training cet

Assessment of Constraints

- Blue Book Reference Chapter 3
- Consider Site:
 - Waterfront (riparian land): vegetated land adjacent to waterbodies
 - Flooding: <2 year ARI flood level, automatically considered Soil Loss Class 6 – high erosion hazard
 - Need to focus on erosion control

9

Centre for Environmental Training cet

Riparian and flood prone land

- What are the E&SC implications for riparian and flood prone land?
 - Social, economic, cultural and heritage values of waterfront land
 - Land degradation, instability, contamination and decline of native vegetation



10

Centre for Environmental Training cet

Groundwater

- How can groundwater affect E&SC?
 - Flow into bores, wells and open excavations
 - Collapse of excavations
 - Site access
 - Perched watertables
 - Moisture fluctuations
 - Seasonal and permanent watertables
 - Implications for plant growth and stabilisation

11

Centre for Environmental Training cet

Salinity

- How can salinity affect E&SC?
 - Implications for plant growth
 - Reduction in C-factor and consequent increase in erosion hazard
 - Blue Book Reference Appendix C lists constraints in various Soil Landscapes throughout NSW



12

Centre for Environmental Training cet

Acid sulfate soils

- How can acid sulfate soils affect E&SC?
 - Acid Sulfate Soil Risk Map
 - Common in coastal NSW
 - Excavations in and near coast and estuaries
 - Procedures for excavation, handling and (pH) stabilisation
 - Preliminary ASS assessment (PASSA)

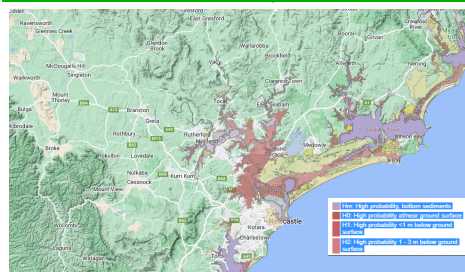


13

Centre for Environmental Training cet

Acid sulfate soil probability

- <https://www.environment.nsw.gov.au/eSpade2Webapp>



14

Centre for Environmental Training cet

Project (E&SC) Planning

- Both short- and long-term impacts must be considered:
 - Identify site limitations (soils, topography, water and vegetation)
 - Identify on-site and off-site values
 - Identify legislative/regulatory requirements
 - Identify areas of risk (or opportunity?)
 - Define project extent allowing sufficient area to achieve environmental goals.

15

Centre for Environmental Training cet

Issues to Consider Regional Soils

- Range of soil types; weak to strong horizon differentiation, gravels to clays
- Typically poor to moderate soil fertility, low pH, high erodibility, variable thickness
- Mass movement on steeper formations
- Erodible surface soils common
- Acidity, sodicity and dispersive soil conditions common
- Often moderate to high erosion hazard, particularly subsoils

16

Centre for Environmental Training cet

Duplex soil

High organic matter and water holding capacity; coarse textured and strong structure

May show bleaching at interface

Moderate structure, imperfect drainage. Fine textured and low nutrient / organic matter



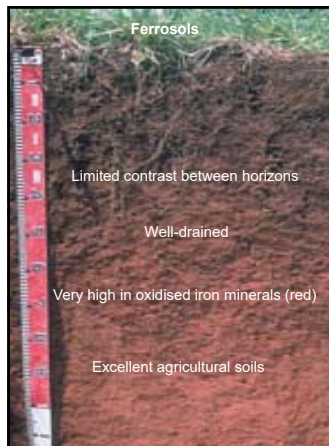
Ferrosols

Limited contrast between horizons

Well-drained

Very high in oxidised iron minerals (red)

Excellent agricultural soils



Sodosols

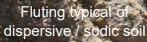
Strong contrast between horizons

Moderately-drained (surface)
Poorly-drained (subsoil)

Subsoil very high in sodium (sodic)

Highly erodible

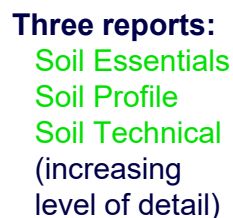
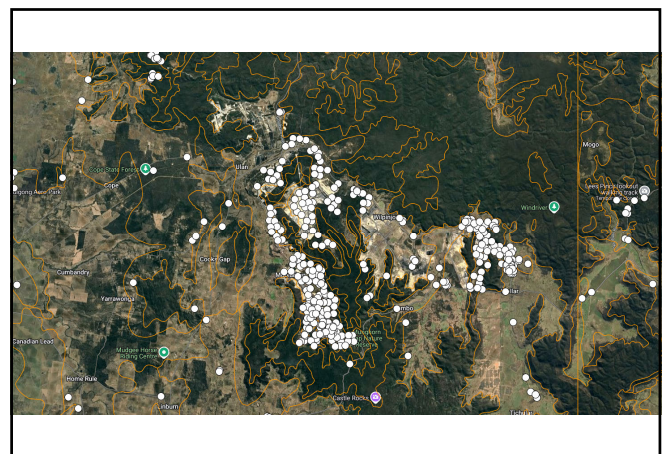
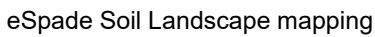




Soil Landscapes of the Gargford - Lake Management in a BNP and NHP

G. J. B. Jones and J. A. Jones

Centre for Environmental Training



Centre for Environmental Training

Potential Limitations Regional Climate

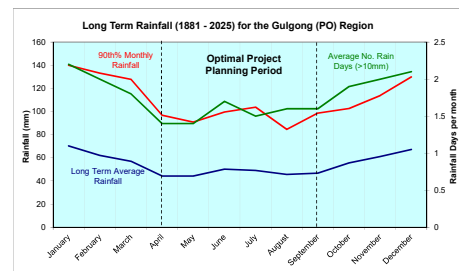
Variability across NSW (E-W & N-S):

- Predictable rainfall patterns over the long term record (changing?)
- El Nino Southern Oscillation (e.g. La Nina 2023/24)
- Wet summers or wet winters
- High variability in evaporation rates (spatially and temporally) from open water and soil surfaces
- Soil cover and permeability commonly limiting to soakage = runoff
- Rainfall Erosivity (R) factors **BB Ref Appendix B**

25

Centre for Environmental Training cet

Potential Limitations Local Climate



26

Source: BOM Gulgong PO

Centre for Environmental Training cet

Potential Limitations Site Hydrology

- Urban stormwater systems
- Flood dynamics variable (spatially and temporally)
- Runoff close to 100% on impervious surfaces (urban); low time of concentration
- Drainage on and around your construction site – where will the water go?

27

Centre for Environmental Training cet



Potential Conflicts

- **Transport Assets**
 - access tracks, local roads, rail corridors, utilities, bridges etc.

29

Centre for Environmental Training cet





Potential Conflicts

- **Water and Sewer Assets**

- Water storages / reservoirs
- Water treatment plants
- Wastewater treatment plants
- Sewer mains
- Pump stations
- stormwater pipe, culverts and detention / treatment facilities

32

Centre for Environmental Training



Potential Conflicts

- **Infrastructure Assets**

- Main and local roads
- Paths and cycle ways
- Kerb and gutter
- Bridges and culverts

34

Centre for Environmental Training



Potential Conflicts

• Natural Assets

- surface waters, catchment areas, groundwater, wetlands, cultural heritage areas, sensitive species and habitats

37

Centre for Environmental Training cet



Endangered List NSW

Species

- 611 terrestrial plants, 124 birds, 44 reptiles, 28 amphibians, 25 marsupials, 21 bats, 16 invertebrates, 13 rodents, 11 fungi/algae/lichens, 7 marine mammals, 4 aquatic plants

Populations (localised areas)

- 20 plants, 17 animals

Ecological Communities

- 102

42

Centre for Environmental Training cet



Management Options?

- Program critical works during times of 'low probability' for extreme weather conditions
- Plan to 'avoid' difficult materials or conditions if possible
- Store problematic materials (dispersive/sodic soils) well away from potential areas of impact (i.e. inundation or further disturbance)
- Maintain maximum surface cover (natural or installed) of exposed areas
- Minimise the use of temporary measures (i.e. stream crossings, stockpiles etc.)

45

Centre for Environmental Training cet