PLANNING AND ENVIRONMENT ACT 1987
PLANNING SCHEME MOYNE
PERMIT NO. 2006/0220/B
ENDORSED PLAN
SHEET 1 OF 36
SIGNED _____ FOR
MINISTER FOR PLANNING
DATE: 18/10/19

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Woolsthorpe Wind Farm

Siemens Gamesa Renewable Energy Pty Ltd.

Sediment, Erosion and Water Quality Management Plan

ENDORSED TO COMPLY
WITH CONDITION
13b
OF PLANNING PERMIT
2006/0220/B

IS280600_SEWQP | 5

28 August 2019

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Woolsthorpe Wind Farm

Project No:	IS280600
Document Title:	Sediment, Erosion and Water Quality Management Plan
Document No.:	IS280600_SEWQP
Revision:	Rev 5
Date:	28 August 2019
Client Name:	Siemens Gamesa Renewable Energy Pty Ltd.
Client No:	
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File Name:	\\Jacobs.com\ANZ\IE\Projects\03_Southern\IS280600\21 Deliverables\3. EMP\Draft\Response to feedback 11 June 19\WWF_SEWQP_V4.docx

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Document history and status

Revision	Date	Description	By	Review	Approved
1	29/03/19	Draft Soil, Erosion and Water Quality Management Plan	Patrick Deveney	Andrew Wallace	Phil Burn
2	22/05/19	Updated following CMA review	Richa Ekka	Andrew Wallace	Hugh Griggs
3	29/05/19	Updated following CMA's final review	Richa Ekka	Andrew Wallace	Phil Burn
4	12/06/19	Update following client review	Richa Ekka	Andrew Wallace	Hugh Griggs
5	28/08/19	Update to include additional EPA reference document	Hugh Griggs	Andrew Wallace	Hugh Griggs

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1. Introduction

1.1 Purpose

The purpose of this Sediment, Erosion and Water Quality Management Plan (SEWQMP) is to outline how sediment, erosion and water quality will be managed throughout the construction of the Woolsthorpe Wind Farm (WWF) to minimise pollution and other environmental impacts.

1.2 Scope

This sub-plan includes the following information:

- State and federal legislative requirements and guidelines relevant to the management of sediment, erosion and water quality
- Risk mitigation and management measures to control potential impacts on soil, erosion and water quality
- Monitoring procedures that will be implemented for management of sediment, erosion and water quality.

1.3 Planning permit conditions

This SEWQMP is a sub-plan which forms part of the overarching Environmental Management Plan (EMP) document for the WWF.

It has been developed in response to permit condition 15 b) of Permit 2006/0220/A which requires a Sediment, Erosion and Water Quality Management Plan.

> *This plan must be prepared in consultation with the Glenelg-Hopkins Catchment Management Authority and other authorities as may be directed by the Minister for Planning.*
>
> *The plan must include:*
>
> *i. a procedure to ensure that silt from batters, cut-off drains, table drains and road works is retained on the site during and after the construction stage of the project.*
>
> *To this end:*
>
> *• all land disturbances must be confined to a minimum practical working area and to the vicinity of the identified work areas;*
>
> *• soil to be removed must be stockpiled and soil horizons must be retained in separate stockpiles and not mixed; and*
>
> *• stockpiles must be located away from drainage lines.*
>
> *ii. arrangements for the storage of fuel and chemicals in securely bunded areas during and after construction away from waterways and vegetation;*
>
> *iii. criteria for the siting of any temporary concrete batching plant associated with the development of the wind energy facility and the procedure for its removal and reinstatement of the site once its use finishes. The establishment and operation of any temporary concrete batching plant must be designed and operated in accordance with the Environment Protection Authority Publication 628 Environmental Guidelines for the concrete batching Industry;*
>
> *iv. the installation of geotextile silt fences (with sedimentation basins where appropriate) on all drainage lines from the site which are likely to receive run-off from disturbed areas.*

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v. procedures to suppress dust arising from construction-related activities. Note: appropriate measures may include water spraying of roads and stockpiles, stabilising surfaces, temporary screening and/or wind fences, modifying construction activities during periods of heightened winds and revegetating exposed areas as soon as practicable.

vi. Procedures to ensure that steep batters are treated in accordance with Environmental Protection Authority Publication 275 Construction Techniques for Sediment Pollution Control;

vii. procedures for waste water discharge management;

viii. a process for overland flow management to prevent the concentration and diversion of waters onto site of erosion prone slopes;

ix. pollution management measures for management of stored and stockpiled materials including waste materials, litter and any other potential source of water pollution;

x. incorporation of pollution control measures outlined in EPA publication 480 Environmental Guidelines for Major Construction Sites;

xi. siting of concrete batching plant an any off-site wastewater and disposal treatment fields at least 100 meters from any watercourse;

xii. Appropriate capacity and a program for annual inspection and regular maintenance of any on-site wastewater management system constructed to service staff, contractors or visitors; and

xiii. immediate remediation of localised erosion with a specified response time.

1.4 Victorian agency review

The SEWQMP must be prepared in consultation with consultation with the Glenelg-Hopkins Catchment Management Authority (GHCMA) and other authorities as may be directed by the Minister for Planning. The following consultation has occurred:

- The GHCMA has reviewed the SEWQ V1 and provided update requirements on 20 May 2019. These comments included additions to the stockpile, maintenance and remediation, and control placement measures. The SEWQMP has subsequently been updated (V2) to address these comments.
- On 23 May 2019 the GHCMA provided a minor update to their 20 May advice, changes included:
    - Incorrect reference to T4 replaces with T14.
    - Update note: *Several proposed (new) road and cable crossings traverse designated waterways (indicated by yellow circles on the attached plan). Their siting across designated waterways are acceptable. However, final approval from the CMA to undertake on ground works for the road and cable crossings is subject to satisfactory applications for Works on Waterways Licences from the CMA.*
- On 29 May 2019 the GHCMA provided further advice indicating that the plan has sufficient information addressing the criteria within the CMA's statutory responsibilities as outlined under the Water Act 1989 (Appendix A).
- As per GHCMA's advice, the EPA was also consulted. On 27 August 2019 the EPA stated it does not have a statutory role, however recommended particular EPA Guidelines are considered. Section 3 of this document includes all Guidelines the EPA referred to. See Appendix C for EPA advice.

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2. Proposed activities

The activities involved in the construction of the WWF identified below have the potential to cause adverse environmental impacts on soil and water quality (i.e. runoff) resulting from erosion, sedimentation and water quality deterioration. These activities will include, but are not necessarily limited to, the following:

- Site clearing for establishment of access tracks, wind turbine sites, laydown areas and electrical cabling and temporary worksite facilities
- Earthworks, including stockpiling and transportation of excavated material
- Excavation and construction of civil foundations for turbine footings
- Concrete cutting, curing, and pouring works associated with turbine footprint (water associated with concrete is alkaline and usually exceeding pH discharge standards)
- Assembly and installation of the wind turbines, and
- Cabling and associated works to establish the electricity transmission system.

Ancillary activities are also likely to be undertaken and have the potential to cause adverse environmental impacts on soil and water quality including:

- Vehicle maintenance
- Construction and management of sanitary facilities, and
- Waste disposal or storage.

The Woolsthorpe wind farm will be constructed on private land used extensively for pastoral farming and very few permanent waterways. The following issues might occur during construction, operation or decommissioning:

- The excavation process exposes soil which will lead to wind and surface water erosion
- The stability of the soil on the construction site could be compromised
- Dust from construction or traffic movement, stockpiled material and exposed soil could decrease local air quality, and
- The construction could lead to contamination of waterways due to sedimentation.

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3. Legislative and policy requirements

The key legislation and policy requirements that are relevant to the management of sediment, erosion and water quality management and are applicable to the proposed WWF Project are as follows:

Victorian Legislation

- *Environment Protection Act 1970*
- *Water Act 1989*
- *Catchment and Land Protection Act 1994*
- *Planning and Environment Act 1987*

EPA regulations and guidance

- State Environment Protection Policy (Waters of Victoria) 2003
- State Environment Protection Policy (Groundwaters of Victoria) 1997
- Environment Protection (Industrial Waste Resource) Regulations 2009
- Environmental Guidelines for Major Construction Sites, Best Practice Management Series, EPA Publication 480 (EPA 1996)
- Environmental Guidelines for the Concrete Batching Industry, EPA Publication 628 (EPA 1998)
- Construction Techniques for Sediment Pollution Control, EPA Publication 275 (EPA 1991)
- Bunding Guidelines, EPA Publication 347.1 (EPA 2015a)
- Classification of Wastes, EPA Publication 448 (EPA 2007)
- Contaminated soil – treatment and disposal (EPA 2015b)
- Code of Practice – Onsite Wastewater Management, EPA Publication 891.4 (EPA 2016)
- Water Quality Objectives for Rivers and Streams – Ecosystem Protection, EPA Publication 791.1 (EPA 2003b)
- Nutrient Objectives for Rivers and Streams – Ecosystem Protection, EPA Publication 792.1 (EPA 2003a)
- Urban Stormwater – Best Practice Environmental Management Guidelines, CSIRO (CSIRO 1999)
- Protocol for Environmental Management – Minimum Control Requirements for Stationary Sources, EPA Publication 829 (EPA 2002).
- Reducing Stormwater Pollution from Construction Sites, EPA Publication 981 (EPA 2005)

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4. Environmental protection measures

Environmental mitigation measures are recommended to minimise adverse effects on surface water and receiving environments resulting from the construction of the Project. Environmental controls have been developed in accordance with the environmental protection principles.

Before commencing construction of the wind farm project, a detailed site assessment will be carried out and recorded to determine requirements for the implementation of the below sediment control measures. Where measures are required, they will be detailed on site plans.

The erosion, sediment and water quality mitigation measures for each activity are discussed below. Examples of sediment and erosion control measures to be utilised are included in Appendix B of this sub-plan.

4.1 Surface water management

Following the detailed site assessment, necessary controls are to be installed prior to construction commencing to prevent the concentration and diversion of waters onto worksites, storage areas or steep / erosion prone slopes. The mitigation measures to be implemented are in accordance with EPA Publication 275 and EPA Publication 480 and are outlined below.

The Project Manager shall be responsible for determining when an environmental protection measure is to be removed and this shall be undertaken in accordance with the Standard Procedures.

4.1.1 General measures

- Infrastructure is to be located 100 m away from designated waterways with the exception of Turbine 14. Turbine infrastructure will be located to avoid environmental constraints where possible.
- Minimise construction of culverts and/or bridges on access roads across minor creeks and gullies through appropriate consideration in the design of these structures. If crossings cannot be avoided the use of ford crossings is recommended.
- In accordance with the Hydrocarbon and Hazardous Substances Management Plan (HHSMP), implement appropriate spill control and bunding measures to control and contain spills; minimise the amount of fuels and chemicals stored on site; and implement contingency plans to handle spills and appropriate clean-up.
- All vegetation removal and soil disturbances should be confined to a minimum practical working area and in the vicinity of the identified work areas to minimise land exposure and erosion.
- Rehabilitation of disturbed areas should be carried out progressively or as soon as practicable following completion of works in each area.
- Temporary sites for material laydown areas, stockpiles, car parking and concrete washout areas will have a buffer of at least 100 metres from waterways and wetlands and be sited such that materials with the potential to contaminate waterways including concrete washdown water and chemicals do not migrate into waterways during rainfall events.
- If a temporary concrete batching plant becomes necessary on site, the plant shall be located at a minimum of 100m from designated waterways and wetlands.

4.1.2 Drainage systems

- Other than the crossing shown on the development plans prepared in accordance with Condition 1, Disturbance must not be located within 100 m of existing designated waterways. Other minor drainage lines are to be protected and any diversion of these lines should be kept to a minimum.
- Any diversion of existing minor drainage lines should be directed to slopes that are not prone to erosion.
- External water will be diverted around the construction footprint at each site using drainage structures such as catch drains, bunds, etc.

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- Temporary drainage structures shall be designed to reduce runoff velocities by using wider inverts, check dams (or similar), silt fencing and re-vegetation of completed areas.
- Drainage structures will be constructed to ensure water diversion away from tracks and steep or erosion prone slopes.

4.2 Erosion and sediment pollution controls

Erosion and sediment pollution measures will be installed throughout the Project site in accordance with EPA Publication 275: Sediment Pollution Control, including those outlined below. These controls will be retained until the associated disturbed areas have regenerated.

- Erosion control measures will be installed prior to construction commencing, to minimise the amount of silt erosion and to prevent the export of sediments from the site. Measures will include geotextile silt fences (with sedimentation basins where appropriate) being located on all minor drainage lines which are likely to receive runoff from exposed and disturbed areas
- Structures to divert water flows assist to prevent clean surface run-off entering the work area and will be installed prior to earthworks. Diversion structures located up slope of a work area can lessen erosion, work area wetness and the amount of run-off that will require treatment through drownstream sediment retention measures.
- Erosion and sediment control structures shall be designed for the one in two-year average recurrence interval (ARI) storm event for temporary structures
- Existing vegetation surrounding the construction sites will be used as a buffer zone for filtering surface runoff wherever possible
- Monitoring for the accumulation of sediment in cut-off and table drains, and following procedures to remove and stockpile the accumulated material when required
- During Site Induction training, all personnel shall be briefed on the requirements to manage erosion and sedimentation
- Erosion prevention shall be undertaken in preference to sediment retention on the Site by using the following measures:
  - Vehicular traffic shall be restricted to constructed access tracks and designated Site entry and exit points
  - Plant, equipment and materials storage shall be restricted to constructed hard standings
  - Runoff should be diverted away from areas that are exposed or sensitive to erosion (e.g. stockpiles) to reduce the risk of erosion on the Site
  - Exposed soil surfaces will be left rough to reduce the velocity of runoff and to increase infiltration to decrease erosion.
- Sediment retention structures shall be utilised wherever appropriate to trap entrained sediment in run-off (refer to the Standard Procedures in Appendix B)
- Sediment retention structures shall be maintained, and when appropriate, removed according to the Sediment Retention Structures Procedure (refer to the Standard Procedures in Appendix B)
- Work shall be scheduled to ensure:
  - The exposure of soil is minimised - i.e. a work area shall only be stripped when necessary and the work area shall undergo progressive rehabilitation
  - Disturbed areas are stabilised as early as practicable by restoring soil cover and/or structure and are progressively stabilised as each section of work is completed
  - Weather conditions are taken into consideration to minimise work during heavy rainfall events.
- Where localised erosion is identified, following weekly inspections or after a rain event, immediate remediation will occur to prevent any further erosion

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- Procedures to ensure that steep batters are treated appropriately for sediment pollution control are outlined in Section 4.2.2.

Detailed designs of sediment controls to be used will be specified in worksite plans in accordance to the above guidance and EPA publications 480 and 275.

4.2.1 Stockpiles

Stockpiling of material from surfaces disturbed during construction may be required throughout the Project. To minimise silting and any other potential adverse environmental impacts caused by stockpiles, the following actions will be undertaken where appropriate:

- Land disturbances will be confined to the minimum practicable working area for each site
- All soil removed will be stockpiled, with topsoil and subsoil being stockpiled separately. Soil will then be replaced as soon as possible; in the order it was removed.
- Stockpiles to be located away from areas of inundation
- Stockpiles will be located at least 100 m away from minor drainage lines and waterways
- Where practicable, stockpiles will be constructed with a gradient of less than 2:1 (horizontal: vertical)
- Stockpiles are to be stabilised through mulching top soil, compaction or seeding the stockpile with sterile grasses, if anticipated to be required for longer than 28 days
- Surface water measures shall divert flows away from stockpiled materials
- Avoid overwatering during dust suppression to prevent surface water ponding and running off through excessive use
- Sediment, erosion and litter control measures will be installed around exposed and disturbed areas, including unstable stockpiles, to prevent the export of sediments from the site. These measures are outlined in the Standard Procedures in Appendix B.

4.2.2 Steep batters

In accordance with EPA Publication 275: Construction Techniques for Sediment Pollution Control, batters and stockpiles will be designed and managed to keep sediments onsite and minimise sediment pollution.

This will involve limiting batters to a gradient of 2:1 (horizontal: vertical) where practicable and the inclusion of stabilisation measures as necessary; including those batters and stockpiles that will remain bare for more than 28 days. These stabilisation measures may include the installation of horizontal boards, mesh, branches, logs or other suitable material held and secured by vertical stakes; or, fibre mesh or mulch firmly pinned onto batters.

To prevent damage to steep slopes and resultant sediment pollution, surface water shall be diverted away from steep and erosion prone slopes, and water not allowed to concentrate near them.

4.3 Procedures for the discharge of collected runoff

The discharge of any collected runoff will be conducted in accordance with the EPA Publication 480, section 4.4, to ensure that dewatering operations do not result in turbid or contaminated water entering natural waterways.

Wherever dewatering of worksites is required, by either pumping or installing a temporary drain, the following procedure will apply:

- Where water has pooled following a rain event and de-watering is required, a preference shall be given to reusing the water within the Site (e.g. for dust suppressing etc.) subject to water quality

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Note that seasonal herbaceous wetlands are highly significant natural features and are not to be drained or impacted by the project. See the endorsed development plans for the location of native vegetation to confirm if wetlands are present in the location

- If a discharge must occur, preference shall be given to discharge of the water to vegetated land within the Site
- Should the flows encountered exceed the capacity of the ground to absorb them, any discharge offsite shall meet the water quality requirements as set out in this section
- Where it is necessary to pump water to an approved point of discharge off the Site:
  - The turbidity of the water to be discharged and that at the point of discharge shall be monitored prior to commencement of pumping
  - Water may only be pumped off-site where the turbidity reading of the water to be discharged is below 30 NTU or the background water quality at the point of discharge (whichever is lowest)
  - If the water to be discharged is too turbid to be discharged and sediment does not settle, it may be appropriate to use flocculants to accelerate the settlement of suspended solids, or for turbid water to be taken off site by a waste contractor.

4.4 Concrete batching

The proposed concrete batching plant will be sited, designed, installed and operated in accordance with EPA Publication 628: Best Practice Environmental Management – *Environmental Guidelines for the Concrete Batching Industry* and be sited at least 100 metres from any watercourse and on land not prone to flooding.

The concrete batching will include the following:

- Working areas and sources of wastewater will be contained by construction of a bund (typically earthen or concrete);
- 100% recycling of concrete batching process water;
- Drainage systems to ensure diversion of uncontaminated stormwater is around the concrete batching plant operations;
- Collection pits to contain a sludge interceptor to separate water and sediments;
- Collection pits fitted with primary and secondary pumps, with alarms to indicate pump failure; and
- A wastewater recycling system that stores the contaminated run-off generated by 20mm of rain in 24 hours
- Ensuring that there is no seepage of wastewater into groundwater e.g., bunding, lining etc.; and
- Provision of a lined dump site to collect residue from the washing of concrete trucks and waste ready-mix concrete

Upon completion of the works will be removed from site at the completion of the construction phase, or at an earlier time if they are deemed no longer necessary. On decommissioning and removal of the concrete batching plant from site following the completion of the construction phase, the site is to be remediated back to be consistent with the surrounding environment.

4.5 Onsite waste water management

In the event that wastewater is to be treated on site, the establishment of an onsite wastewater treatment system and disposal site will be selected, sited and installed in accordance with the EPA Publication 891: Code of practice – onsite wastewater management, which outlines codes of conduct in line with the *Environment Protection Act 1970* and the State environment protection policies – Waters of Victoria (SEPP WoV) and Groundwaters of Victoria (GoV). These facilities are to be inspected at least annually to ensure adequacy of the

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system and adherence to EPA guidelines and legislation. Waste water will also be managed in accordance with measures outlined in the CWMP.

The waste-water management system will be of a suitable capacity to service staff, contractors and visitors anticipated at the peak of construction.

Any wastewater disposal treatment fields will be located at least 100m from any watercourse.

4.5.1 Washout facilities

Washouts for concrete truck chutes and other construction equipment will be required during construction. To manage this waste, washout areas will be designated, ensuring that:

- the areas are located 100 m away from designated water ways and must be 10 m away from minor drainage lines, stormwater inlets, waterways, areas of native vegetation and significant fauna and other sensitive areas identified on site.
- the area should be appropriately bunded and sized to contain all contaminated water from washing up.

Dried concrete residue may then be recycled or disposed of as solid inert waste.

In case of a spill refer to the contingency management measures in section 4.3 of the Hydrocarbon and Hazardous Substances Management Plan.

4.6 Storage and handling of fuels and other hazardous chemicals

To prevent contamination of waterways from spills of fuels and other hazardous substances, the safe storage and use of these substances is important. Any hydrocarbon and hazardous substance storage facilities and other bunded areas at the Project site will be designed and installed as follows to reduce adverse risks to the environment:

- Storage facilities for hydrocarbons and hazardous substances are to be lockable units within internal bunding
- Surface water run-off management is to be designed to divert away from bunded areas
- Bunding capacity is to be sufficient to store the total of the spilt material and rainfall that may enter the bunded area
- Appropriate signage and labels affixed to all hydrocarbon and hazardous substance storage areas
- Storage areas for hydrocarbon and hazardous substance are not to be within 100m of any designated waterways, or within 30 m of any minor drainage lines, stormwater system or other areas where spills may cause significant environmental damage, such as areas of high ecological value.

Refer to the Hydrocarbon and Hazardous Substances Management Plan for more details on the safe use and handling of hazardous substances.

4.7 Access tracks and hard stand areas

Access tracks and hard stand areas will be required for the Project and are a considerable source of land disturbance. To mitigate this risk of erosion and water contamination, the access tracks will be designed and constructed to minimise erosion and avoid the generation of mud both during and after construction. Mitigation methods to be included in specific work plans may include:

- Incorporating existing roads and tracks wherever possible
- Constructing windrows along the boundary of each track in areas prone to erosion
- Compacting crushed rock into the surface to bind it together

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- Keeping disturbed areas to the minimum practicable working area
- Avoiding tracks that run directly down a face of the slope. If this is unavoidable, include regular gutters across tracks running directly down the face of a slope
- Public roads around the site shall be kept clear of mud through the appropriate installation of rumble grids at access points, washdown facilities on –site and street sweeping of surrounding roadways to ensure roads are kept safe and as clean as is practicable
- Erosion and sediment control structures shall be designed to retain sediment on-site
- Gullies and areas subject to inundation to be designed wherever possible, to minimise disturbance and the potential for sedimentation of waterways.

Ongoing maintenance of access tracks and hardstand areas is also necessary to limit any erosion with specific attention to access tracks that are on steeper gradients, near waterways and at waterway crossings with special efforts required to minimise physical disturbance to the banks and beds of waterways.

Nominated and controlled areas of high vulnerability should be identified and site access to these areas will be limited to the fewest vehicles practicable.

All construction vehicles are required to only travel on clearly defined access tracks with designated exit and entry points to be clearly marked on site maps and signposted.

4.8 Dust management

Construction of the Project has the potential to cause dust through topsoil stripping and earthworks and mechanical disturbance (dust emissions generated via the movement of vehicles and equipment). Dust can potentially result in a range of adverse effects including:

- Adverse human health effects, particularly to airways and eyes
- General amenity impacts
- Visible dust plumes (an amenity-nuisance issue rather than an issue of reduced visibility)
- Adverse effects on agricultural activities and the health of vegetation.

4.8.1.1 Mitigation Measures

To mitigate the impacts of dust, and avoid dust nuisance to any residential areas, the following measures are recommended:

- Stockpiles should be removed from site as soon as possible
- Appropriate speed limits to be established for the offsite substation access track and enforced for all vehicles to reduce wheel generated dust, and dust from moving materials
- During the construction period, control dust emissions through localised water spraying (particularly on access tracks, stockpiles and hardstand surfaces)
- During drier periods of the year with high evaporation rates, review daily weather updates to provide adequate warning of likely strong winds, to assist with daily management of wind-blown dust
- Cover vehicle loads while transporting material, where practicable
- Investigate the need for rumble grids to be installed at entry point to bitumen roads to remove any residual material on wheels to prevent dirt being tracked onto roads
- Deploy street sweeping in the event that mud or soil build up is detected at intersection with bitumen roads
- Investigate the need to install dust screens and/or wind fences to shield exposed areas
- Revegetate disturbed areas as soon as practicable.

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Construction water for dust suppression purposes is to be sourced from any available and licensed points within the immediate vicinity to the site. Water may also be supplied from sediment dams in line with the waste minimisation procedures outlined below.

5. Monitoring

On-going monitoring of the environmental performance throughout construction of WWF will be undertaken to ensure the standards set by the EMP are being complied with. The following monitoring activities have been derived from EPA Publication 480 (Section 9.2) and outline how environmental impacts related to sediment erosion will be monitored at the WWF site. Where sediment management devices are found to be inadequate, they should be redesigned to make it effective.

Table 5.1 : Monitoring requirements

Performance criteria	Performance Objective	Indicator / monitoring requirements	Frequency	Responsibility
Water quality	Prevent adverse impacts to water bodies	Complete a baseline water quality survey of downstream receiving environments	Prior to construction commencing	Contractor Site Safety & Environment Officer
		Monitor water quality to identify contamination from construction processes and any additional control measures required	Weekly, and as triggered by wet weather requirements	Contractor Construction Site Supervisor
		Check for localised erosion on site. Special attention will be paid to access tracks and cabling works on relatively steep gradients, near waterways and waterway crossings	Weekly, and as triggered by wet weather requirements	Contractor Construction Site Supervisor
		Monitor sediment levels in water holding areas and sediment fencing, check for integrity of bunds and other control structures	Weekly, and as triggered by wet weather requirements	Contractor Construction Site Supervisor
Sediment controls, silt fences and traps	Ensure installations are operating effectively	Conduct regular inspections to ensure installations are working effectively (see Section 4.2)	Weekly, and as triggered by wet weather requirements	Contractor Construction Site Supervisor
		Measure turbidity on the input and output side of control devices during wet weather inspections	As triggered by wet weather requirements	Contractor Construction Site Supervisor

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6. Maintenance and remediation

Regular and on-going maintenance and remediation will occur throughout the life of the construction phase of the Project to help achieve the environmental protection measures outlined in Section 5 of this plan.

Maintenance and remediation activities will include:

- Maintenance of sediment controls and remediation of areas of identified erosion will occur:
  - Within one week of the identification of localised erosion during fine weather
  - As required to prevent release of contaminants and further erosion during rainfall events
  - Cleaning of sedimentation basins will occur when the accumulated sediment has reduced the basins capacity by more than 30%, as indicated by depth pegs.
- Cleaning of all drains will occur where capacity of drains is reduced to; remove silt, vegetation and litter and dispose of as appropriate.

Where localised erosion is identified on the Project site, the area is to undergo immediate remediation by repairing or replacing sediment erosion controls to prevent further erosion and the contamination of downstream receiving environments. The project team will clean up the sediment where possible or rehabilitate any impacts. Where necessary, surface water management structures will be constructed to prevent surface water away further impacting the eroded site.

Where sediment transfer in waterways is detected, the Contractor's Site Safety & Environment Officer (or delegate) will investigate to identify the source of the contamination. Where project activities or infrastructure are identified as being the cause, immediate remediation works will be undertaken to resolve the issue at the source of the contamination. If necessary, diversion measures will be constructed to divert surface water away from the contamination source.

Where there is an occurrence of hydrocarbon and hazardous substance spills, the spill will be cleaned up immediately. Spill kits will be made available all along the site and staff will be informed about location of the spill kits and trained to effectively use. Training will take place at Toolbox meetings on a regular basis. Spill containment, clean up and remediation will be undertaken in accordance with the project's Hydrocarbon and Hazardous Substances Response Plan.

Where necessary, the Contractor's Site Safety & Environment Officer shall contact the EPA and GHCMA to advise them of any pollution of waterways.

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Appendix A. Consultation with GHCMA

Glenelg Hopkins CMA

Your Ref:	**Woolsthorpe Wind Farm**
Date:	**20 May 2019**
Document No:	**01**

APPROVED FOR THE MINISTER FOR PLANNING

SHEET 18 OF 36

Dave Allen
Project Engineer
Siemens Gamesa Renewable Energy

daveallenbsdp@bigpond.com
cc. hugh.griggs@jacobs.com

Dear Dave,

Application Number (CMA Ref):	**GHCMA-F-2019-00110**
Property Address:	**Woolsthorpe-Heywood Road Woolsthorpe VIC 3276**
Cadastral:	**Lots 1 – 11, TP5031, Lots 1 – 3, TP95438, CA 3B2, Section 21, PP3880, Parish of Woolsthorpe**
Zone(s):	**Farming Zone**
Overlay(s):	**None**

Thank you for your application which we received on 16 April 2019 for the review of the draft Sediment, Erosion and Water Quality Management Plan (the Plan) for the Woolsthorpe Wind Farm.

The CMA has no flood mapping for the subject land and has not received a hydrological/surface water assessment for the Wind Farm development, therefore, the CMA cannot comment on any potential flood risk to infrastructure.

Turbine and infrastructure layout plans have been provided with the application. The CMA has overlaid these with the CMA's designated waterway maps (indicative locations shown by dark blue lines on the attached plan), which indicates most proposed turbines to be an acceptable distance from designated waterways on the subject land. Turbine no. 4 is located closest to the designated waterway at approximately 80 metres from the waterway. In consideration of the turbine location at the headwaters of the waterway and the nature of the waterway, it is considered acceptable for Turbine no. 4 to be located at this proposed location.

The layout plans show plains grassy wetlands (seasonal herbaceous wetlands) to be present within the Wind Farm development area. The Plan references its significance and requires that the seasonal herbaceous wetlands are to be neither drained nor impacted by the development.

The Plan identifies the following minimum offset distances to designated waterways:

- Disturbance must not be located within 100 metre of designated waterways and infrastructure will be located 100 metre of designated waterways.
  Note: These offsets would contradict the intention to locate Turbine no. 4 according to the provided site layout plans. It is suggested the Plan is amended to reflect the exceptions applicable to Turbine no. 4.
- Any temporary concrete batching plants will be located at least 100 metres from designated waterways and wetlands.

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SHEET 19 OF 36

- Temporary sites for materials laydown, hydrocarbon and hazardous substance storage, car parking and all washout areas (concrete, construction equipment etc.) will be located at least 100 metres from waterways and wetlands.
- Any wastewater disposal treatment areas will be located at least 100 metres from any watercourse.

The Plan has not provided an offset distance for stockpile placement from designated waterways. The Plan has also not identified remediation measures to be implemented in the event of erosion or hydrocarbon and hazardous substance spills. It is suggested the Plan is revised to include these.

While the Plan provides examples of generic sediment and erosion control measures, this could be supplemented with general placement (accompanied by diagrams) of the measures for effective operation (e.g. upstream of a structure to intercept external flows etc.). This would provide clarity on local drainage paths with specific control measures for drainage from key infrastructure to the designated waterway and assist contractors in the development of Contractor Environmental Management Plans for construction purposes.

The updated Sediment, Erosion and Water Quality Management Plan should be provided to the CMA for comment.

Several proposed road and cable crossings traverse designated waterways (indicated by yellow circles on the attached plan). Any works in, on or around a designated waterway require a licence from the CMA. Note that this requirement also applies to works to upgrade existing road and cable crossings across designated waterways.

The Works on Waterways Licence application form can be obtained from our Hamilton Office or downloaded from our website at www.ghcma.vic.gov.au.

Contact **Amanda Sim** on 03 5571 2526 should you have any queries. Please quote **GHCMA-F-2019-00110** to assist the CMA in handling your enquiry.

Yours sincerely,

Steven Homer
Floodplain and Works Manager

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Glenelg Hopkins Catchment Management Authority
Statutory Water Group

A: PO Box 502, Hamilton Vic 3300 T: 03 5571 2526 F: 03 5571 2935 E: planning@ghcma.vic.gov.au W: www.ghcma.vic.gov.au

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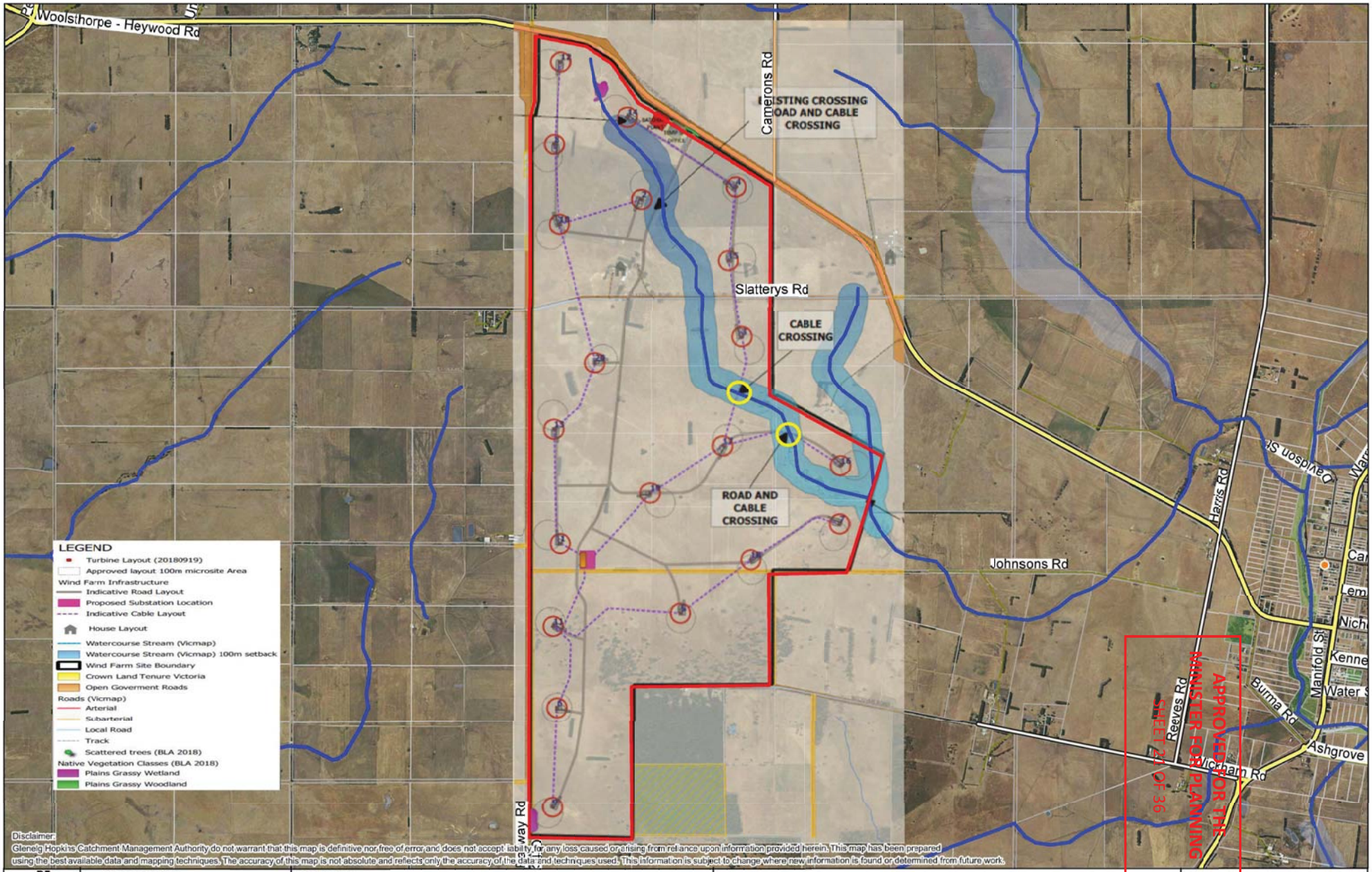
11. **Nominal Flood Protection Level (NFPL)** is the 1%AEP flood level plus a freeboard (height) allowance to provide increased protection against flooding. It is generally the minimum floor level for habitable spaces and the level below which no electrical outlets or sewer openings are permitted.


Woolsthorpe - Heywood Rd
Camerons Rd
EXISTING CROSSING ROAD AND CABLE CROSSING
Slatterys Rd
CABLE CROSSING
ROAD AND CABLE CROSSING
Johnsons Rd
Harris Rd
Davidson St
Manifold St
Reeves Rd
Burma Rd
Ashgrove
Wickham Rd
APPROVED FOR THE MINISTER FOR PLANNING
SHEET 34 OF 36
LEGEND
Turbine Layout (20180919)
Approved layout 100m microsite Area
Wind Farm Infrastructure
Indicative Road Layout
Proposed Substation Location
Indicative Cable Layout
House Layout
Watercourse Stream (Vicmap)
Watercourse Stream (Vicmap) 100m setback
Wind Farm Site Boundary
Crown Land Tenure Victoria
Open Goverment Roads
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Arterial
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Track
Scattered trees (BLA 2018)
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Plains Grassy Wetland
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Disclaimer:
Glenelg Hopkins Catchment Management Authority do not warrant that this map is definitive nor free of error and does not accept liability for any loss caused or arising from reliance upon information provided herein. This map has been prepared using the best available data and mapping techniques. The accuracy of this map is not absolute and reflects only the accuracy of the data and techniques used. This information is subject to change where new information is found or determined from future work.
N
MAP SCALE
0
1,600
metres
LEGEND
Parcel (Title)
Wind Farm Boundary
Designated Waterway
Woolsthorpe-Heywood Road, Woolsthorpe
Woolsthorpe Wind Farm
DRAWN BY: Amanda Sim
SHEET: 01 of 01
Glenelg Hopkins
CMA

Glenelg Hopkins CMA

Your Ref: **Woolsthorpe Wind Farm**
Date: **23 May 2019**
Document No: **02**

APPROVED FOR THE MINISTER FOR PLANNING

SHEET 22 OF 36

Dave Allen
Project Engineer
Siemens Gamesa Renewable Energy

daveallenbsdp@bigpond.com
cc. hugh.griggs@jacobs.com

Dear Dave,

Application Number (CMA Ref):	**GHCMA-F-2019-00110**
Property Address:	**Woolsthorpe-Heywood Road Woolsthorpe VIC 3276**
Cadastral:	**Lots 1 – 11, TP5031, Lots 1 – 3, TP95438, CA 3B2, Section 21, PP3880, Parish of Woolsthorpe**
Zone(s):	**Farming Zone**
Overlay(s):	**None**

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Turbine and infrastructure layout plans have been provided with the application. The CMA has overlaid these with the CMA's designated waterway maps (indicative locations shown by dark blue lines on the attached plan), which indicates most proposed turbines to be an acceptable distance from designated waterways on the subject land. Turbine no. 14 is located closest to the designated waterway at approximately 80 metres from the waterway. In consideration of the turbine location at the headwaters of the waterway and the nature of the waterway, it is considered acceptable for Turbine no. 14 to be located at this proposed location.

The layout plans show plains grassy wetlands (seasonal herbaceous wetlands) to be present within the Wind Farm development area. The Plan references its significance and requires that the seasonal herbaceous wetlands are to be neither drained nor impacted by the development.

The Plan identifies the following minimum offset distances to designated waterways:

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  Note: These offsets would contradict the intention to locate Turbine no. 14 according to the provided site layout plans. It is suggested the Plan is amended to reflect the exceptions applicable to Turbine no. 14.
- Any temporary concrete batching plants will be located at least 100 metres from designated waterways and wetlands.

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PAGE 23 OF 36

- Temporary sites for materials laydown, hydrocarbon and hazardous substance storage, car parking and all washout areas (concrete, construction equipment etc.) will be located at least 100 metres from waterways and wetlands.
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The updated Sediment, Erosion and Water Quality Management Plan should be provided to the CMA for comment.

Any works in, on or around a designated waterway require a licence from the CMA. Note that the requirement for licences from the CMA also applies to maintenance and upgrade works for existing road and cable crossings across designated waterways.

Several proposed (new) road and cable crossings traverse designated waterways (indicated by yellow circles on the attached plan). Their siting across designated waterways are acceptable. However, final approval from the CMA to undertake on ground works for the road and cable crossings is subject to satisfactory applications for Works on Waterways Licences from the CMA, including provision of sufficient information as outlined in the application form and demonstrating maintenance of flow conveyance and continuity across the road and cable crossings.

The Works on Waterways Licence application form can be obtained from our Hamilton Office or downloaded from our website at www.ghcma.vic.gov.au.

Contact **Amanda Sim** on 03 5571 2526 should you have any queries. Please quote **GHCMA-F-2019-00110** to assist the CMA in handling your enquiry.

Yours sincerely,

Steven Homer
Floodplain and Works Manager

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SHEET 24 OF 36

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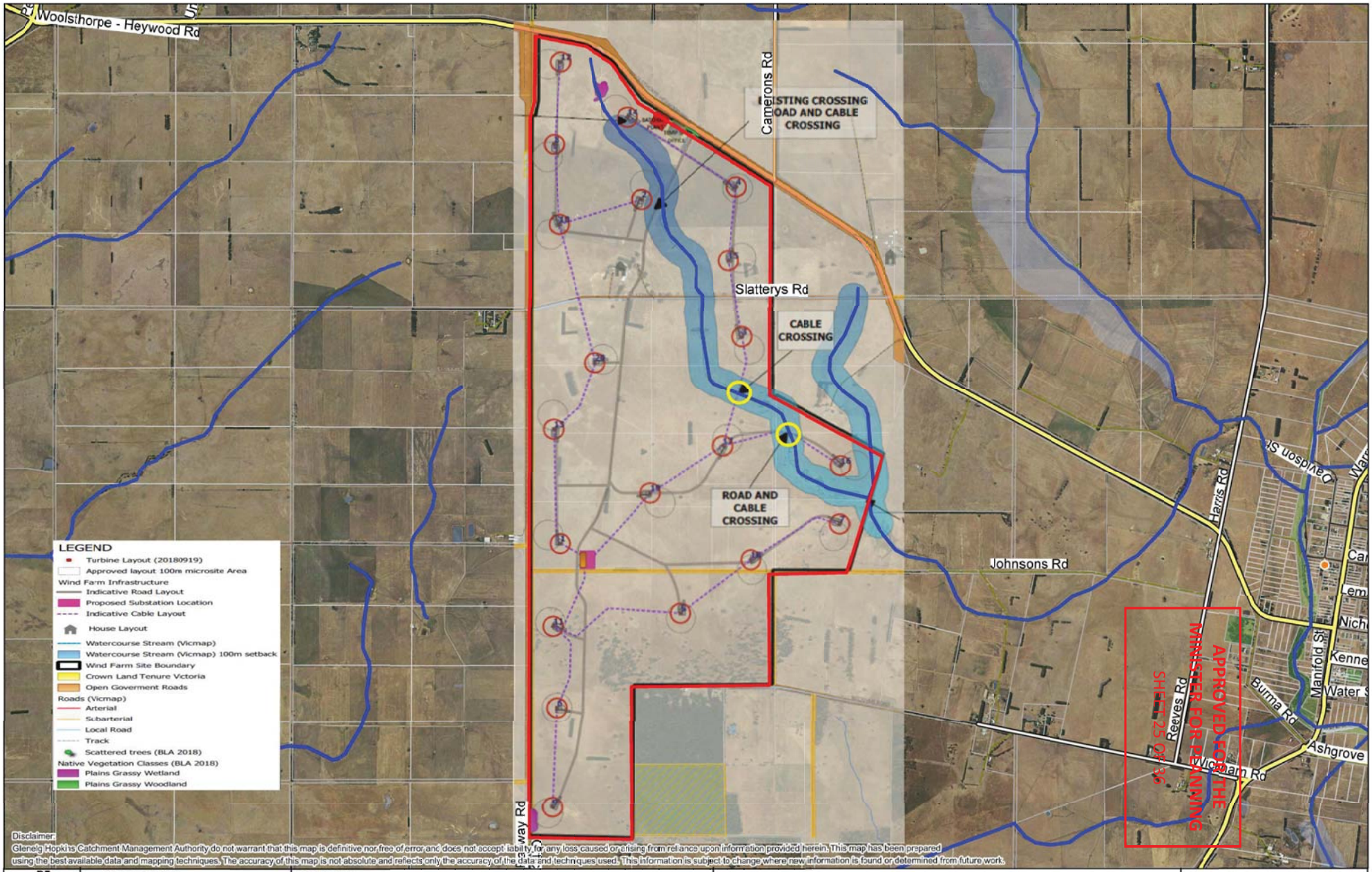
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APPROVED FOR THE MINISTER FOR PLANNING
SHEET 25 OF 36
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Turbine Layout (20180919)
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Woolsthorpe-Heywood Road, Woolsthorpe
Woolsthorpe Wind Farm
DRAWN BY: Amanda Sim
SHEET: 01 of 01
Glenelg Hopkins
CMA

Glenelg Hopkins CMA

Your Ref: **Woolsthorpe Wind Farm**
Date: **29 May 2019**
Document No: **03**

APPROVED FOR THE MINISTER FOR PLANNING

SHEET 26 OF 36

Dave Allen
Project Engineer
Siemens Gamesa Renewable Energy

daveallenbsdp@bigpond.com
cc. Hugh.Griggs@jacobs.com
Andrew.Wallace@jacobs.com
Richa.Ekka@jacobs.com

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Zone(s):	**Farming Zone**
Overlay(s):	**None**

Thank you for providing the updated Sediment, Erosion and Water Quality Management Plan, revision 02 (the Plan) for the Woolsthorpe Wind Farm.

You have requested the CMA endorses the Sediment, Erosion and Water Quality Management Plan as having achieved the requirements of permit condition no. 15 (b) of the planning permit no. 2006/0220/A for the Woolsthorpe Wind Farm. Condition no. 15 (b) is comprised of thirteen criteria (i) to (xiii) pertaining specifically to the preparation of the Plan for the development.

While the planning permit states the Glenelg Hopkins CMA as the primary authority for consultation during the preparation of the Sediment, Erosion and Water Quality Management Plan, it is noted several of the criteria listed under permit condition no. 15 (b) are not wholly within the CMA's statutory responsibilities. The CMA strongly suggests that the appropriate authorities (e.g. the Environment Protection Authority for water quality and pollution matters) are consulted for their endorsement of the Plan as having achieved the requirements of the planning permit conditions.

The CMA views the Plan provides sufficient information at the pre-construction stage to acceptably address criteria within the CMA's statutory responsibilities as outlined under the Water Act 1989, pertaining to the minimisation of environmental impacts due to construction works on designated waterways. It is envisaged that more detailed construction management plans will be developed to provide specific environmental management measures for site conditions.

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Floodplain and Works Manager

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SHEET 27 OF 36

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SHEET 28 OF 36

Appendix B. Standard procedures

Stockpile formation

This standard procedure is to be implemented when soil stockpiles are formed on-site. Stockpiles shall be protected from erosion by applying the following methods:

- Topsoil from access tracks and hard standing areas shall be stockpiled and retained for rehabilitation following construction
- Stockpiles shall be covered, compacted or seeded as necessary to minimise material loss if in place for greater than 28 days
- The number of stockpiles shall be, as far as is practicable, minimised
- A maximum 2:1 height to width ratio shall apply
- Whenever a stockpile is located on a slope with a grade greater than 2.5 %
- Down slope sediment retention structure (e.g. silt fence) shall be installed
    - Up slope catch drain will be installed
    - Separate stockpile locations shall be provided for different types of spoil, including topsoil, subsoil and different types of waste material where practicable.
- Soil from different soil horizons must not be mixed
- Soil from different properties must not be mixed or stockpiled on a property different to its origin
- Locations for stockpiles shall be outside the drip lines of any trees or vegetation to be protected
- Stockpile shall be located ideally in areas where they are protected from wind.

Flow diversion devices

Structures to divert water flows assist to prevent clean surface run-off entering the work area. Diversion structures located up slope of a work area can lessen erosion, work area wetness and the amount of run-off that will require treatment through sediment retention measures.

- Catch drains shall be installed where required to prevent water from outside the work area mixing with runoff from within the work area so as to prevent run-off from entering the work area and to direct the run-off from the work area to desired locations
- Where required, temporary cut-off drains shall be installed with a grader or other appropriate machine prior to rain events to shed run-off from works areas. Temporary on-site drainage shall be graded to stable vegetated areas or on-Site holding ponds/ sediment basins.

APPROVED FOR THE MINISTER FOR PLANNING

SHEET 29 OF 36

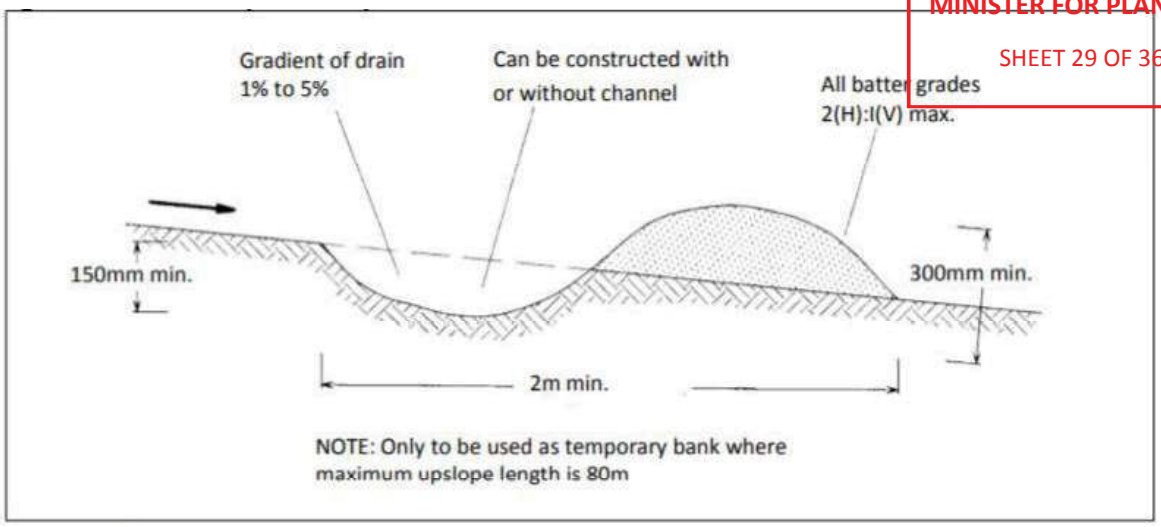

Illustration reproduced courtesy of Landcom.

Figure 1 Cross section of typical low flow diversion (Source Environment Protection Guidelines for Construction and Land Development in the ACT Environment Protection Authority March 2011)

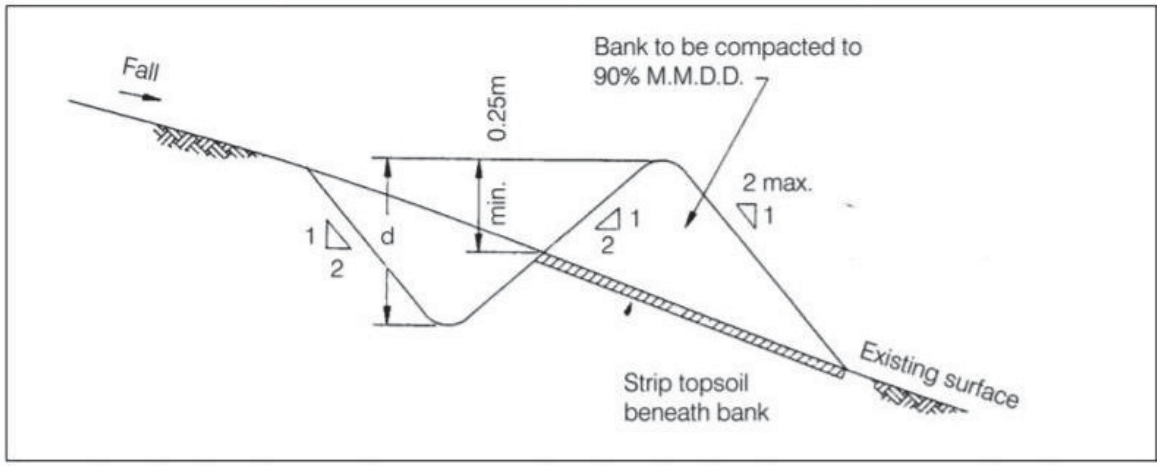

Figure 2 Cross section of typical high flow diversion (Source Environment Protection Guidelines for Construction and Land Development in the ACT Environment Protection Authority March 2011)

Sediment retention structures

Sediment retention structures will be utilised for the trapping of entrained sediment in run off.

- Sediment retention structures will be designed and installed to cater for the predicted flows from a one-in-two year storm event (two-year ARI with intensity of six hours) (EPA Victoria Publication 480)
- Overflow bypasses (see “Storm Outlet” in Figure 1 below) will be maintained for all sediment retention structures to provide an alternative flow path in the event of a storm exceeding the one in two year storm event

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SHEET 30 OF 36

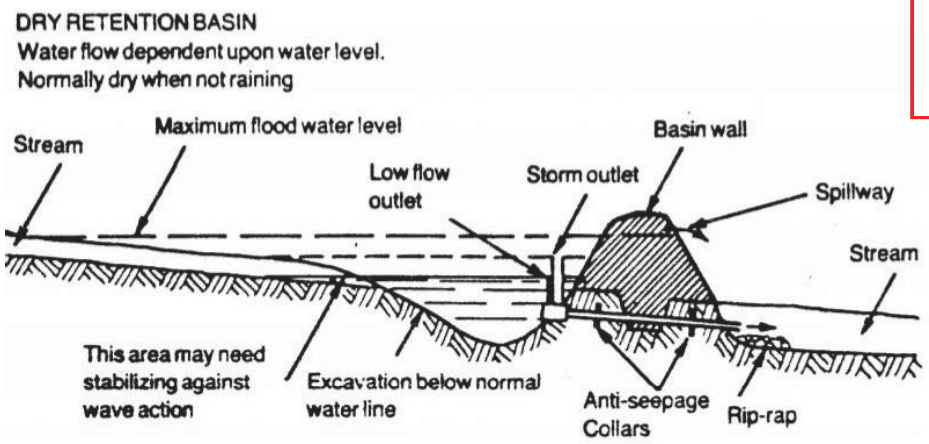

Figure 3 Cross section of typical flood detention basin (Source EPA Publication 275: Construction Techniques for Sediment Pollution Control)

- Sediment retention structures will be installed on the down slope perimeter of the site to inhibit sediment leaving the site through surface water runoff
- Sediment retention devices may be constructed from geotextile (including silt fence), biodegradable filters (including coir and straw), synthetic filters, rock/gravel, vegetation and soil.

Straw bale fence

Straw bale fences can be an effective way of reducing flow rates (to allow sediments to fall out of suspension) and to filter runoff. A straw bale fence shall be:

- Used to service catchments of less than 0.5 ha only
- Installed in a manner which ensures no gaps are present that would allow runoff to pass under or around the bales
- Constructed only from straw bales – i.e. hay bales shall NOT be used.

Silt fences

Silt fences can be an effective way of reducing flow rates (to allow sediments to fall out of suspension) and to filter runoff. A silt fence shall be:

- Employed wherever necessary
- Used to service a catchment of less than 0.6 ha only per line of fence
- Constructed along the contour
- Reinforced by placing steel posts (“star pickets”) every metre
- Constructed with the ends of the fence turned up stream to ensure that a build-up of runoff behind the fence cannot pass around the fence
- Trenched into the ground and appropriately backfilled and compacted to ensure the filter fabric cannot be washed away and runoff flow through the fence line unhindered.

Grass strip filters

Grass strip filters may be employed to decrease the velocity of runoff and to drop the sediment from suspension. The grass should not be higher than the adjacent ground surface.

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Access tracks and vehicle movements

Access tracks shall be constructed from the existing public road network into the Site to ensure that a stabilised access point into and out of the Site is established as early as possible.

- The number of access points shall be minimised
- Vehicle access on and off the Site during wet weather conditions should be restricted as far as is practicable
- Access points will be constructed and appropriately maintained during the Project.

Replacement/repair and de-silting of sediment retention structures

Sediment structures shall be de-silted or replaced whenever:

- The captured sediment has diminished the capacity of the structure by a third
- The captured sediment is inhibiting the structure from working effectively
- The structure has been damaged, vandalised or stolen.

Deficiencies in sediment retention structures shall be rectified within 48 hrs of detection or before the next rain event, whichever comes first.

Removing sediment retention devices

The Contractor Construction Site Supervisor shall be responsible for determining when an environmental protection measure is to be removed.

Sediment retention devices shall only be removed when vegetation has been re-established in the catchment and works in the area are completed. Whenever a sediment retention structure is removed;

- Collected sediment shall be removed and relocated to a stabilised area of the Site;
- The affected area shall be restored; and
- The materials shall be reused or recycled where possible.

Vehicle and road cleaning

Access tracks shall be constructed from the existing public road network into the Site to ensure that a stabilised access point into and out of the Site is established as early as possible.

- The number of access points shall be minimised
- Vehicle access on and off the Site during wet weather conditions should be restricted as far as is practicable
- Access points will be constructed and appropriately maintained during the Project
- Vehicles will be cleaned of mud and dirt prior to leaving the Site by:
  - Driving the length of the stabilised access track
  - Use of rumble strip
  - Physical scraping of material from the vehicle.
- The public road network shall be inspected for cleanliness each day
- Where the public road network has been affected by activities on Site:
  - The pavement shall be cleaned within 24 hours
  - Where the state of the pavement may create a safety risk, the pavement shall be cleaned immediately

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- If a sweep of the road does not remove sediment to a safe standard, the road shall be washed with sediment controls in place to protect the drainage network and waterways.

Storm events and de-watering

Procedure for dealing with storm events

The mitigation measures incorporated into the EMP should minimise the effect of most storm events. However, the effect of intense storm events will require special attention as set out in this procedure.

Weather forecasts shall be monitored to determine if an intense storm is forecast.

When an intense storm is forecast the following actions shall be implemented:

- Before the storm, as far as it is practicable and safe to do so:
  - Grade the lowest excavation level to direct surface water to suitably located sumps from which pumping can take place
  - Remove all litter from areas where it could potentially enter waterways
  - Ensure all fuels, oils and chemicals are correctly stored in bunded areas
  - Inspect all existing drains and sediment controls
  - Rectify any deficiencies and make any necessary improvements to drains (e.g. install drains or windrows of soil at the top edge of fill batters under construction) and sediment retention devices.
- During the storm, as far as it is practicable and safe to do so:
  - Carry out inspections of all sediment retention devices
  - Where measures are found to be defective, initiate repairs.
- After the storm:
  - Carry out inspections of all sediment retention devices
  - Where measures are found to be defective, initiate repairs
  - De-water work areas as required (see below)
  - Notify the EPA (1800 444 004) if any incidents occur that could pose a risk to the environment.

Procedure for de-watering of a work area

This procedure applies to the removal of water pooled on a work area, especially in trenches or excavations, by either pumping or installing a temporary drain.

- Where water has pooled following a rain event and de-watering is required a preference shall be given to reusing the water within the Site (e.g. for dust suppressing etc.)
- If a discharge must occur, preference shall be given to discharge of the water to stabilised land within the Site
- Should the flows encountered exceed the capacity of the ground to absorb them, any discharge off site shall meet the water quality requirements as set out in this section
- Where it is necessary to pump water to an approved point of discharge off the Site:
  - The turbidity of the water to be discharged and that at the point of discharge shall be monitored prior to commencement of pumping
  - Water may only be pumped off-site where the turbidity reading of the water to be discharged is below 30 NTU or the background water quality at the point of discharge (whichever is lowest)

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- If the water to be discharged is too turbid to be discharged and sediment does not settle, it may be appropriate to use flocculants to accelerate the settlement of suspended solids.

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Katelyn Nash

From: Kerrie Atkins <Kerrie.Atkins@epa.vic.gov.au>
Sent: Tuesday, 27 August 2019 8:01 AM
To: Katelyn Nash
Subject: RE: Woolsthorpe Wind Farm 2006/0220 (EPA Reference 5007147)

Hi Katelyn,

Thank you for your email.

EPA does not have a statutory role in assessing and approving Sediment, Erosion and Water Quality Management Plans and EPA does not usually provide input into such Management Plans. EPA would generally recommend the proponent to consider relevant guidelines in their assessment, such as:

- EPA Publication 275 *Construction Techniques for Sediment Pollution Control*.
- EPA Publication 480 *Environmental Guidelines for Major Construction Sites*.
- EPA Publication 981 *Reducing Stormwater Pollution from Construction Sites*.
- EPA Publication 628 *Environmental Guidelines for the Concrete Batching Industry*.

I hope this helps,

Regards

Kerrie Atkins
Senior Planning Officer
Major Projects & Planning

Environment Protection Authority Victoria
Government Offices, Corner Little Malop and Fenwick Streets, Geelong VIC 3220 | GPO Box 4395 Melbourne Vic 3001 | DX 216073
☎ 1300 372 842 (1300 EPA VIC) |Ekerrie.atkins@epa.vic.gov.au | www.epa.vic.gov.au

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A healthy environment that supports a liveable and prosperous Victoria, now and always.

EPA acknowledges the Traditional Owners and custodians of the land and we pay our respects to their Elders, past, present and emerging. We're an inclusive workplace that embraces diversity in all its forms.

From: Katelyn Nash [mailto:KatelynN@klms.com.au]
Sent: Thursday, 22 August 2019 5:07 PM
To: Kerrie Atkins <Kerrie.Atkins@epa.vic.gov.au>; contact <contact@epa.vic.gov.au>
Cc: Barbara Shashkoff <BarbaraS@klms.com.au>
Subject: Woolsthorpe Wind Farm 2006/0220 (EPA Reference 5007147)

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Hi Kerrie,

Hope you are well and hopefully you are the right person to assist us with our enquiry.

We are currently working through the discharge of various permit conditions associated with a planning permit which has been issued for a Wind Energy Facility at Woolsthorpe.

Condition 15 of the planning permit requires the preparation of a number of environmental management plans which are required to be adhered to during construction. In preparing the plans, some authorities are required to be consulted.

Condition 15b of the permit requires a Sediment, Erosion and Water Quality Management Plan (SEWQMP). We have prepared a plan which has been reviewed and considered by the Glenelg Hopkins Catchment Management Authority (the CMA), as required under the conditions. The comments provided by the CMA note that consultation should occur with the EPA given that some of the matters in the Plan are outside of the remit of the CMA. Specifically, matters relating to water quality and pollution.

We consider the documents have been prepared in accordance with the EPA listed publications. We seek confirmation from the EPA regarding this and that the Plan, as provided, is satisfactory.

To assist in your review of the documents, we provide a link to the following documents;

- Copy of the planning permit for the Woolsthorpe Wind Energy Facility (reference 2006/0220)
- Final Comments from the Glenelg Hopkins Catchment Management Authority dated 29 May 2019 (includes a site plan for proposed works and proximity to a declared waterway)
- Sediment, Erosion and Water Quality Management Plan prepared by Jacobs, Revision 4, dated 12 June 2019
- EPA comments to the amended permit application dated 24 January 2017

https://klms.sharefile.com/d-s18522515f7a4fdab

If you can please review and confirm if the EPA has any comments to the Management Plan has submitted.

Please do not hesitate to contact us should you have any queries or require anything further.

We look forward to hearing from you soon.

Regards,

Katelyn Nash | Planning Manager
Direct: **03 9794 1607** Mobile: **0488 448 225**
katelynN@klms.com.au

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