Land and Environment Court
of New South Wales

CITATION :	**Gales Holdings Pty Limited v Tweed Shire Council [2008] NSWLEC 209**
PARTIES :	APPLICANT Gales Holdings Pty Limited RESPONDENT Tweed Shire Council
FILE NUMBER(S) :	10264 of 2005
CORAM:	Preston CJ
KEY ISSUES:	Appeal :- filling of land in preparation for residential subdivision - loss of vegetation - whether vegetation part of endangered ecological communities - whether adequate offsets
LEGISLATION CITED:	Environmental Planning and Assessment Act 1979 s 97 Threatened Species Conservation Act 1995 s 4, Sch 1 Pt 3
CASES CITED:	Gales Holdings Pty Limtied v Tweed Shire Council [2006] NSWLEC 85 Gales Holdings Pty Limited v Tweed Shire Council [2006] NSWLEC 212
DATES OF HEARING:	31 March 2008, 1, 2, 3, 4, 7, 8, 11, 16 and 21 April 2008 (conditions filed)
DATE OF JUDGMENT:	14 July 2008
LEGAL REPRESENTATIVES:	APPLICANT Mr T Robertson SC with Mr P Larkin SOLICITORS Woolf Associates RESPONDENT Ms S Duggan (barrister) SOLICITORS Stacks/Northern Rivers

THE LAND AND
ENVIRONMENT COURT
OF NEW SOUTH WALES

PRESTON CJ

14 JULY 2008

10264 OF 2005

GALES HOLDINGS PTY LIMITED V TWEED SHIRE COUNCIL

JUDGMENT

Introduction

1 **HIS HONOUR**: Gales Holdings Pty Limited (Gales) has lodged a development application to fill certain low lying land north and south of Turnock Street, Kingscliff on the far north coast of New South Wales for the purpose of preparing the land primarily for future urban residential sub-division development. A temporary haul road is also proposed to transport fill to the site.

2 The land to be filled is currently vegetated with a variety of native vegetation and some exotics. The proposed filling necessarily would result in the loss of that vegetation. Part of the land is also habitat for an endangered species of animal, the Wallum Froglet. A substantial part of this habitat is now proposed to be retained in an unfilled and enhanced state.

3 Gales has appealed to this Court under s 97 of the *Environmental Planning and Assessment Act 1979* against the Council's refusal of the development application. The appeal has been the subject of a preliminary determination on 28 April 2006 where the Court held that the development application needed to be accompanied by a Species Impact Statement on the basis that the proposed fill and haul road development was likely to significantly impact the Wallum Froglet: see *Gales Holdings Pty Limited v Tweed Shire Council* [2006] NSWLEC 212.

4 Subsequently, Gales amended its development application, principally so as to reduce the extent of filling and its impacts on the habitat of the Wallum Froglet. I granted leave to Gales to amend its development application as described in the Amended Statement of Environmental Effects (which became Exhibit A) and the amended set of plans (Exhibit B).

5 The development application was further amended through the course of the hearing including in relation to the location and design of the proposed conveyor and haul road, the water quality treatment system, construction noise management plan, and Wallum Froglet management plan (Exhibit T). The design of the Wallum Froglet Habitat Area was also revised (Exhibit M).

6 The issues in the appeal, by the end of the hearing, essentially related to the impacts the amended development might have on the native vegetation on the land that would be filled. Other issues, including the impact on the Wallum Froglet, were resolved by further amendments to the retained habitat area and the proposed conditions of consent.

7 The issues remaining to be resolved can be summarised as follows:

(a) Is the native vegetation on the land, which will be impacted by the proposed development, part of any endangered ecological

community listed under the *Threatened Species Conservation Act 1995*?

(b) If the answer to (a) is yes, is the proposed development likely to significantly affect any such endangered ecological community so that the development application would need to be accompanied by a Species Impact Statement?

(c) If the answer to either (a) or (b) is no, whether sufficient offsets are provided to compensate for the loss of the native vegetation?

8 For reasons I will provide below, I find that:

(a) The native vegetation on the site that will be impacted by the proposed development is not part of any endangered ecological community;

(b) As a result of the finding in (a), the issue of whether a Species Impact Statement is required does not arise;

(c) The native vegetation and habitat on the land that will be retained as part of the amended development proposal, including the Wallum Froglet habitat area, an area of littoral rainforest and habitat areas to the south of Turnock Street, which will be the subject of conservation covenants, are adequate offsets in the circumstances; and

(d) The proposed amended development is acceptable and consent should be granted subject to appropriate conditions.

Proposed development

9 The key elements of the proposal, as described in the amended Statement of Environmental Effects, are:

(a) The filling of land north and south of Turnock Street. The area to be filled covers approximately 17 hectares and will be filled to a minimum level approximating the design flood level of the locality (RL 3.3m AHD).

(b) The retention of unfilled areas of land, both north and south of Turnock Street, including:

(i) a largely undisturbed Wallum Froglet habitat area immediately north of and fronting Turnock Street, Wallum Froglet refuge areas, sediment basin and water quality pre-treatment area;

(ii) an area in the north eastern corner of the subject land, north of Turnock Street, which includes a small assemblage of littoral rainforest vegetation, other vegetated areas, as well as land that is already at a level at or above the design flood level of RL 3.3m AHD;

(iii) an area immediately south of Turnock Street and east of the Turnock Street/Elrond Drive roundabout, which includes some swamp forest vegetation.

(c) The construction of a new 3 m x 2 m box culvert under Turnock Street. The box culvert would perform the drainage and fauna underpass function originally required by development consent 97/107 and the associated Part 5 approval issued for the

construction of Turnock Street, which required the construction of box culverts, but which were not constructed by the Council.

(d) The creation of an unfilled, north-south orientated, open channel, north of Turnock Street, to convey upstream storm water flow across the site to the sediment basis and water quality pre-treatment area and thereafter to the main drainage system south of Turnock Street, via the proposed box culvert under Turnock Street.

(e) The construction of a temporary haul road from Tweed Coast Road to Turnock Street roundabout to transport sand fill material from an already approved excavation and deposition site west of Tweed Coast Road.

The development site

10 The proposed development will be carried out on three sites: the fill site, the haul road and the conveyor and sand loading and stockpiling activities. The land involved is as follows:

Fill site

- Lots 1-9 DP 781714 each have an area of approximately 3693m^2 and are located to the southwest of the existing residential lots fronting Pearl Street. These lots do not have a road frontage.

- Lot 11 DP 871753 has an area of 10.13 hectares, straddles Turnock Street and Elrond Drive and its southern boundary has frontage to the Quigan Street road reserve.

- Lot 12 DP 871753 has an area of 6.767 hectares, straddles Turnock Street and is bounded by the Quigan Street road reserve to the south.

- Lot 13 DP 781753 has an area of 6.633 hectares, straddles Turnock Street and is bounded by Quigan Street and the Quigan Street road reserve to the south.

- Lot 14 DP 781753 has an area of 1857m^2 and frontage to Turnock Street.

The fill envelope encompasses all of Lots 7-9 DP 781714 and Lot 14 DP 871753 and part of Lots 1-6 DP 781714 and part of Lots 11, 12 and 13 DP 871753.

Haul road

- Lots 3 DP 828298 is located adjacent to Tweed Coast Road and has an area of 13.07 hectares. The land is vacant and is bounded to the east and north by other vacant land owned by Gales.

- Lots 26C and 26D DP 10715 have a combined total area of 24.10 hectares. The land is adjoined to the north by residential housing. Land to the west and east is vacant land. Land to the south is used for rural and agricultural purposes. An east-west drainage channel bisects the land approximately through the centre.

- Quigan Street road reserve.

Conveyor, sand loading and stockpiling activities

- Lots 1-3 DP 828298. Lot 3 is described above. Lot 1 occurs on the western side of Tweed Coast Road and is low-lying vacant land. It has an area of approximately 4.233. It adjoins vacant land to the north and south. It has frontage to Crescent Street to the west.

Planning Controls

11 By the end of the hearing, there was no issue that the proposed development, as amended, is permissible with consent. The Council no longer pressed any issue relating to the planning controls under the relevant environmental planning instruments or development control plans that apply to the land as a reason for refusal of the development application. Nevertheless, the Court, exercising the functions of the consent authority on the appeal, is obliged to consider these controls.

12 The applicable local environmental plan is Tweed Local Environmental Plan 2000. The land proposed to be filled is zoned 2(c) Urban Expansion. The haul road is zoned part 2(c) Urban Expansion, part 5(a) Special Uses (Drainage Reserve) and the part is uncoloured land. The land to be used for sand conveyance for stockpiling is also zoned part 2(c) Urban Expansion and part 5(a) Special Uses.

13 The proposed filling is defined as "earthworks" and the temporary haul road is a "road", although could also be considered to be ancillary to the earthworks. The uses are permissible with development consent in the 2(c) zone. Roads are permissible without consent in the 5(a) zone, however, in this case, a development consent is required by virtue of cl 35 relating to the presence of acid sulphate soil. Roads are also permissible with consent on uncoloured land.

14 The proposed stockpiling and conveyance activities associated with the filling are temporary and are ancillary to the earthworks and are permitted in the 2(c) zone. In the 5(a) zone, these works are permitted on the basis that they are compatible with adjacent uses and the uses permitted (with or without consent) in adjacent zones. Turnock Street is uncoloured land and the proposed box culvert under Turnock Street is permissible with consent.

15 Clause 8(1) provides that the consent authority may grant consent to development only if:

> "(a) it is satisfied that the development is consistent with the primary objective of the zone within which it is located, and
>
> (b) it has considered those other aims and objectives of this plan that are relevant to the development, and
>
> (c) it is satisfied that the development would not have an unacceptable cumulative impact on the community, locality or catchment that will be affected by its being carried out or on the area of Tweed as a whole".

16 The objectives of the 2(c) Urban Expansion zone are:

> "**Primary objectives**
>
> - to identify land for urban expansion (which will comprise mainly residential development focused on multi-use neighbourhood centres) and to ensure its optimum utilisation consistent with environmental constraints and the need to minimise residential landtake.
>
> **Secondary objectives**
>
> - to allow associated non-residential development which meets the recreation, shopping, commercial, employment and social needs of future residents.
> - to ensure that sensitive environmental areas within and outside the zone are protected from any adverse impacts of development.
> - to enable planning flexibility to achieve the other objectives of the zone by means of detailed guidelines in a development control plan."

17 Filling of the land enables future urban development, which is consistent with the primary objective of the zone. The proposals in relation to

retention of vegetation and habitat areas are consistent with the secondary objectives.

18 The objectives of the 5(a) Special Uses zone are:

> "**Primary objective**
>
> - to identify land which is developed or is proposed to be developed, generally by public bodies, for community facilities and services, roads, railways, utilities and similar things.
>
> **Secondary objective**
>
> - to provide flexibility in the development of the land, particularly if it is not yet or is no longer required for the relevant special use."

19 There is no current proposal for upgrading and/or constructing new drainage works within the area covered by the 5(a) zone. The proposed haul road, sand stockpiling and conveyance activities are only temporary works (for a period of approximately 53 weeks) which would be removed at the completion of the filling activities. In this context, this part of the development would satisfy the primary objective of the zone.

20 Other aims and objectives of Tweed Local Environmental Plan 2000 that are relevant to the proposed development include the aims in cl 4 and the objective in cl 5 of promoting development that is consistent with the principles of ecologically sustainable development. I have considered these aims and objectives in reaching the decision that the proposed development, with appropriate conditions as discussed below, is consistent with these aims and objectives.

21 I am also satisfied that the proposed development would not have an unacceptable cumulative impact on the community, locality or catchment that will be affected by its being carried out or on the area of Tweed as a whole.

22 The following clauses of the Tweed Local Environmental Plan 2000 are also relevant to the proposed development.

23 Clause 13 relates to the development of uncoloured land on the zone map and, in respect of this proposal, requires the consent authority to consider whether the proposed development is compatible with development permissible in the adjoining zone and the character and use of existing development in the vicinity (cl 13(3)(a)).

24 One area of uncoloured land affected by the proposed development occurs adjacent to the Turnock Street/Elron Drive roundabout and would be developed for part of the temporary haul road. The adjacent land is zoned 2(c) Urban Expansion and the existing development in the vicinity includes public roads and vacant low lying land. Some housing development occurs on land zoned 2(c) about 50 to 60 metres to the north. The temporary haul road is generally compatible with the development permissible in the 2(c) zone and, in particular, the existing use in the immediately surrounding land. After discussion between the parties' respective experts, special traffic and construction noise mitigation measures are proposed and would be imposed by conditions of consent to address impacts on the closest housing to the north.

25 A further area of uncoloured land (Turnock Street road reserve) is affected by the proposed box culvert. The adjoining land is zoned 2(c) Urban Expansion and is vacant.

26 Clause 15 relates to the availability of essential services. Water and sewerage services are not required for the filling of land. It is possible that water, telecommunications and power services would be required to service a small temporary site office facility off Turnock Street during the filling. Separate development consent would be obtained for the temporary site office at which time these issues could be addressed.

27 Clause 17 requires the consent authority to consider whether the proposed development is likely to have a significant social or economic impact in the locality or the Tweed local government area and, if so, obtain and consider a social impact assessment. The Council had expressed concern that traffic and construction noise might impact adversely on the social amenity of residents in the housing to the north of the haul road and west of the fill site. However, as a result of the agreed traffic and construction noise mitigation measures, which will be imposed by conditions of consent, I do not consider the proposed development will have a significant social or economic impact and, hence, no social impact assessment is required.

28 Clause 22 applies to land which has frontage to a designated road and requires that consent may only be granted if the Council is satisfied of certain matters relating to traffic safety and efficiency. Turnock Street and Tweed Coast Road are designated roads. Various works and measures are proposed to be implemented in relation to traffic management, safety and efficiency. The proposed conditions of consent also address these matters. The Council no longer raises any issue in relation to the development adversely impacting on the efficiency on traffic safety or the efficiency of Tweed Coast Road or Turnock Street.

29 Clause 28 applies to the development in zone 7(l) Environmental Protection (Habitat) and on adjacent land. It requires the consent authority to consider the likely effects, both direct and indirect, the development might have on flora and fauna and a plan of management showing how any adverse effects arising from the development are to be mitigated (cl 28(4)(a)-(c)). Land adjacent to the proposed haul road is zoned 7(l) Environmental Protection (Habitat). Flora and fauna issues are discussed in the Amendment Statement of Environmental Effects including a particular assessment of the impacts on flora of the proposed filling of land and associated temporary haul road in Appendix F. The Council no longer presses any issue in relation to these matters. The proposed conditions of consent will address these matters.

30 Clause 34 provides that the impact of flooding must be considered where land is subject to flooding inundation. Apart from the sloping batters around the perimeter of the filling envelope, the land is proposed to be filled to a level approximating the Council's design flood level for the locality of RL 3.3m AHD, with some minor variation above and below this level to facilitate drainage of the fill.

31 Provision will be made to convey large stormwater drainage flows from upstream, across the subject site, to the main drainage system south of Turnock Street and filling can be undertaken without adversely affecting floodwater levels in the locality. The proposed conditions of consent address the issue of flooding and drainage. The Council no longer raises any issue in relation to these matters.

32 The placement of road base material for the temporary haul road would accommodate local drainage by way of small pipe crossings where required. The haul road drainage would be temporary only and would be removed at the completion of the filling project with the decommissioning of the haul road.

33 Clause 35 relates to the management of acid sulphate soils. The land is classified partly as Class 2 and partly as Class 3 land on the Council's acid sulphate soil planning map. An acid sulphate soil and groundwater management plan has been prepared and included in Appendix G of the amended Statement of Environmental Effects. The proposed conditions of consent address this matter. The Council raises no issue in relation to acid sulphate soils.

34 There is a draft local environmental plan which has been exhibited, namely draft Tweed Local Environmental Plan Amendment No 21. This draft plan proposed to amend Tweed Local Environmental Plan 2000. It has not been proceeded with by the Council, rather elements are being

incorporated into a new draft Local Environmental Plan 2008. In the circumstances, I do not give weight to this draft amendment plan.

35 North Coast Regional Environmental Plan 1988 applies to the land. Clause 15 requires consideration of the impact of development on waterways, wetlands and fishery habitats. In particular, cl 15(c) requires consideration of any loss of habitat which will or is likely to be caused by the carrying out of the development.

36 The land is not adjoining or adjacent to any substantial natural waterway. However, it is part of the Kingscliff drainage catchment. Stormwater generated from the land would ultimately discharge into the trunk drainage network upstream of the Tweed River.

37 Drainage and water quality management issues will be implemented to maintain a satisfactory water quality and stormwater flows within the local drainage catchment. These matters are addressed in the proposed conditions of consent. The Council no longer raises any issue in relation to these matters.

38 The proposal would result in the loss of vegetation on the land to be filled north and south of Turnock Street, which vegetation has some species characteristic of wetlands. The issues in relation to the impact on this vegetation are considered below in relation to the substantive issues concerning the loss of native vegetation.

39 The proposed development would not affect any foreshore reserve areas, aquatic reserve or recognised fishery habitat.

40 Clause 32B applies to all lands covered by the New South Wales Government's Coastal Policy. Tables 2 and 3 of the Policy contains strategic actions and principles proposed to implement the Policy. The proposed development will not compromise the attainment of these strategic actions and principles. The proposed development is well

removed from water front open space and beaches and would not raise any issue in relation to access to or shadowing of these areas.

41 State Environmental Planning Policy 71 – Coastal Protection applies to all land within the coastal zone, including the subject land. The proposed development is not within a sensitive coastal location and is not designated significant coastal development within the meaning of the Policy. Nevertheless, the consent authority is required to consider the matters of relevance in cl 8. In relation to the relevant considerations in cl 8, I find:

(a) The development would not compromise the aims of the Policy set out in cl 2;

(b) The development will not result in the loss of vegetation comprising any endangered ecological community (for reasons given below);

(c) Specific measures are proposed to retain certain native vegetation (including littoral rainforest) and habitat of the Wallum Froglet and Mitchell's Rainforest Snail and, hence, to conserve such plants and animals; and

(d) The development would be unlikely to have unacceptable cumulative effects on the environment.

42 In respect of the development control provisions under Part 4 of the Policy, only cl 16 dealing with stormwater is of relevance. In this regard, stormwater discharges would be managed in accordance with the requirements of the Tweed Urban Stormwater Management Policy and will be subject to conditions of consent.

43 One development control plan, namely Tweed Development Control Plan 2007, applies to the subject site. This development control plan

consolidated prior development control plans. The following parts of the development control plan are relevant.

44 Tweed DCP Section A3 – Flood Liable Land identifies the subject site as being within the predicted 100 year flood level. The development proposes that the majority of land be filled to a level approximating the Council's adopted design flood level for the locality (RL 3.3m AHD). The filling proposed would not lead to adverse flooding impacts in the locality. The Council no longer presses any issue in this regard.

45 Tweed DCP Section A13 – Socio-Economic Impact Assessment is no longer relevant. As a result of the agreement of the parties' respective experts in relation to mitigating traffic and construction noise, there is no longer an issue of social amenity impacts on residents of nearby housing.

46 Tweed DCP Section A14 – Cut and Fill applies to residential development. Although the proposed development is for filling of land, the purpose of the filling is to facilitate future residential development. Accordingly, this part of the DCP should be considered.

47 The proposed development would involve filling to depths in excess of the one metre prescribed by Section A14. These filling depths are necessary, however, to raise the land to levels approximating the Council's design flood level for the locality, in preparation for future residential subdivision of the land, as required by Section A3 and B4 of the Tweed DCP 2007. In the circumstances, the Council's Infrastructure Engineer has indicated that the requirement to fill land to the design flood level (DCP Section A3) should take precedence over the controls contained in Section A14 of the DCP. The Council does not press this issue.

48 Controls and management measures relating to general filling earthworks levels, fill embankments, erosion and sediment control and drainage management are included within the amended engineering report which is Appendix K to the amended Statement of Environmental Effects and the

Water Management Strategies Report which is Appendix J to the amended Statement of Environmental Effects. The measures are incorporated in the proposed conditions of consent.

49 An environmental management plan which is Appendix L to the amended Statement of Environmental Effects includes proposals for environmental monitoring, including in relation to various water quality parameters. Again, these matters are addressed in the proposed conditions of consent.

50 Controls and management measures relating to the establishment of the Wallum Froglet habitat area have been addressed in amended plans and are included in the proposed conditions of consent.

51 The Council no longer presses any issue in relation to these matters.

52 Tweed DCP Section B4 – West Kingscliff applies to the subject site. The map accompanying the DCP identifies the proposed fill site for medium and low density housing. The temporary haul road is identified as low density housing and drainage. Filling of the land is consistent with the land use designation in the DCP. Areas of native vegetation and habitat will be retained, thereby responding to the environmental constraints of the site.

53 Tweed DCP Section B9 – Tweed Coast Strategy applies to the subject site. This part of the DCP contains broad strategic planning objectives and controls to cater for the future growth of the Kingscliff and South Kingscliff area. The proposed development is broadly consistent with the Strategy insofar as the land to be filled is part of the future urban development area identified to accommodate urban population growth on the Tweed Coast. The Tweed Coast Strategy includes a proposal for a permanent road from Tweed Coast Road to Turnock Street. The proposed development includes a temporary haul road between Tweed Coast Road and Turnock Street. To this extent, the proposed development is consistent with the Strategy, albeit that the haul road is only temporary.

54 Tweed DCP Section B9 also makes particular reference to habitat protection for the Mitchell's Rainforest Snail (B9.7.2). As a result of the amendments made to the proposed development, there is no longer any impact on the Mitchell's Rainforest Snail habitat. This was an issue in previous proceedings dealing with a related development application: *Gales Holdings Pty Limited v Tweed Shire Council* [2006] NSWLEC 85. Indeed, Gales now proposes a conservation covenant in relation to land that is part of Mitchell's Rainforest Snail habitat. The Council raises no issue in relation to the proposed development's impact on the Mitchell's Rainforest Snail or its habitat.

55 Tweed DCP Section B9 also addresses vegetation management at West Kingscliff, being land owned by Gales (B9.7.7). The pockets of littoral rainforest referred to will not be filled and will be conserved by a restriction as to user. The vegetation on the site that will be lost by filling is not part of any endangered ecological community (for reasons given below). Native vegetation forming part of the habitat for the Wallum Froglet will be retained in the Wallum Froglet habitat and refuge areas to the north and south of Turnock Street. The proposed development will not impact on vegetation communities in adjoining environmental protection zones.

Vegetation

56 The vegetation on the land has been extensively examined by many persons over the years. Gales' ecological consultants have mapped the vegetation communities occurring on the site. A copy of the vegetation map is annexed to these reasons for judgment.

57 The vegetation communities that will be impacted by the filling comprise:

(a) To the north of Turnock Street: vegetation community 4 Swamp Oak – Coast Banksia – Swamp Box (three small, isolated patches);

vegetation community 6 Doughwood – Cheese tree (two large, separated areas); vegetation community 8 Paperbark – Exotic Grassland (two isolated, small patches); and Pasture – Wasteland (separating the two areas of vegetation community 6 Doughwood - Cheese tree);

(b) To the south of Turnock Street: vegetation community 12 Swamp Grassland – Sedgeland; and

(c) On the haul road land: vegetation community 8 Paperbark – Exotic Grassland and vegetation community 10 Pasture – Wasteland.

58 The Council contends that:

(a) Vegetation community 12 is a part of the endangered ecological community of Freshwater Wetland on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions (Freshwater Wetlands);

(b) Vegetation community 6 is a transitional community between the endangered ecological communities of Freshwater Wetlands and Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions (Swamp Sclerophyll Forest); and

(c) Vegetation community 4 is part of the endangered ecological community of Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions (Swamp Oak Floodplain Forest).

59 Gales contests that vegetation communities 4, 6 or 12 are endangered ecological communities, including being part of Freshwater Wetlands, Swamp Sclerophyll Forest or Swamp Oak Floodplain Forest.

Whether EECs are present on the land?

60 An endangered ecological community is defined in s 4 of the *Threatened Species Conservation Act 1995* to be an ecological community specified in Part 3 of Schedule 1 of the *Threatened Species Conservation Act*. Freshwater Wetlands, Swamp Sclerophyll Forest and Swamp Oak Floodplain Forest are each specified in Part 3 of Schedule 1. In each case, the ecological community is stated to be "as described in the final determination of the Scientific Committee to list the ecological community".

61 Hence, in order for vegetation communities 4, 6 and 12 to be one or more of Freshwater Wetlands, Swamp Sclerophyll Forest and Swamp Oak Floodplain Forest, they must be an ecological community as described in the final determinations of the Scientific Committee to list each of Freshwater Wetlands, Swamp Sclerophyll Forest and Swamp Oak Floodplain Forest as endangered ecological communities. For the reasons I give below, I do not find that vegetation communities 4, 6 and 12 meet the descriptions in the final determinations of the Scientific Committee to list Freshwater Wetlands, Swamp Sclerophyll Forest or Swamp Oak Floodplain Forest as endangered ecological communities. I will deal with each of these endangered ecological communities.

Freshwater Wetlands

62 I am not satisfied that vegetation communities 12 or 6 are the endangered ecological community that is described in the final determination of the Scientific Committee to list Freshwater Wetlands. The vegetation communities do not satisfy the edaphic, locational, floristic or structural criteria specified by the Scientific Committee in its final determination.

Edaphic and locational criteria

63 The Scientific Committee describes Freshwater Wetlands to "typically occur on silts, muds and humic loams in depressions, flats, drainage lines, backswamps, lagoons and lakes associated with coastal floodplains". "Coastal floodplains" are described by the Scientific Committee in its final determination to be "level landform patterns on which there may be active erosion and aggradation by channelled and overbank stream flow with an average recurrence interval of 100 years or less" (paragraph 1).

64 This description has three components that are linked: an edaphic (soil) component ("silts, muds or humic loams"), a topographical component ("depressions, flats, drainage lines, backswamps, lagoons and lakes") and a locational component ("associated with coastal floodplains"). The soils are "in" the topographical features identified, which are in turn "associated" with the coastal floodplain, as defined by the Scientific Committee. This suggests that these topographical features are formed by the fluvial processes referred to in the definition of floodplains, namely, "active erosion and aggradation by channelled and overbank stream flow with an average recurrence interval of 100 years or less". So too the soils which are in such topographical features will be formed by such fluvial processes.

65 First, the evidence of Dr Hazelton, a soil scientist called by Gales, is that the soils on the site are podzols developed in situ over thousands of years by a soil forming process, podzolisation, involving the weathering and leaching of sands of aeolian and marine origin. Dr Hazelton states that the soils are not alluvial, are not part of a coastal floodplain and have not been formed from drainage line activity such as overbank flow.

66 Dr Hazelton stated (in evidence in reply):

> "The sand plains on higher levels of Gales Holdings simply comprise weathered down wind blown sand dunes. These

> dunes have been stable for an extensive period of time so that the sands have undergone podzolisation. Podzolisation is a very slow process and sand podzols have been developed on the site. In Australia, podzol development has occurred in dunes over the last ~ 6000 years – (ie, since shortly after sea level reached approximately its present height: for example, see Thompson and Bowman (1984)).
>
> Consequently, the soils on the site show no evidence of alluvial layering characteristic of association with coastal floodplains. Rather, they show a soil profile developed from soil forming processes consistent with a long period of leaching by ground water infiltration and fluctuation and an absence of periodic alluvial sediment deposition from overbank stream flow (Hazelton 2007). The presence of well developed sand podzols negates the possibility of alluvial deposition on the site over the last several thousand years from fluvial processes such as overbank flow." (p 4).

67 Dr Hazelton stated that the soil materials excavated from the soil pits over the site correspond with the Kingscliff and Pottsville soil landscapes described in D J Morand, *Soil Landscapes of the Murwillumbah-Tweed Heads 1:100,000 map sheet* published by the Department of Land and Water Conservation in 1996.

68 The Kingscliff soil landscape is summarised in Morand 1996 as having:

- Geology: "Aeolian and marine quartz sand sheets and dunes of the Pleistocene inner barrier system".

- Topography: "Extremely low, level to gently undulating beach ridge plains and sand sheets...Elevation is generally 1-5m. Slopes range from 0-2% and relief if 1-2m. The majority of this soil landscape comprises sand sheets of reworked Pleistocene materials...Natural drainage is generally by sub-surface flow, but a network of drains has modified the drainage pattern".

- Vegetation: "Extensively cleared and disturbed open-heathland and forest...Wetter locations support open-woodlands of broad-leaved paperbark (*Melaleuca quinquenervia*).

- Soils: The soils are described as podzols. The dominant soil materials are dark loamy sand (topsoil – A_1 horizon); bleached sand (deep topsoil – A_2 horizon) and yellowish grey sand (deep topsoil and subsoil – A_3, AB horizon).

69 Areas of Pottsville soil landscape are noted to occur as inclusions within the Kingscliff soil landscape. No included Pottsville soil landscape has been mapped as occurring on the site proposed to be developed, however, Dr Hazelton considered that soil materials excavated from certain soil pits on the site corresponded with the Pottsville soil landscape.

70 The Pottsville soil landscape is described in Morand 1996 as being a wetter version of the Kingscliff soil landscape and as occurring in poorly drained depressions within sand sheets and dunes of the Tweed-Byron Coast. Its features are:

- Geology: "Pleistocene marine and aeolian quartz sands of the inner barrier system".

- Topography: "Poorly drained closed depressions (coastal swamps) within Pleistocene sand sheets. Elevation is < 3m. Drainage is by means of sub-surface water movement, and during wet periods ponded surface water is common. Watertables are generally within 100 cm of the surface".

- Vegetation: "Uncleared wet heathland in the lowest areas and tall closed paperbark forest in more elevated areas. Broad-leaved paperbark (*Melaleuca quinquenervia*) is the dominant species of the paperbark forest... Swamp Mahogany (*Eucalyptus robusta*), Swamp banksia (*Banksia robur*), lillypilly (*Acmena smithii*) and

coast tea-tree (*Leptospermum laevigatum*) are other common trees...Wet heathland consists of well separated and isolated stands of broad-leaved paperbark (*Melaleuca quinquenervia*) and Swamp Mahogany (*Eucalyptus robusta*) shrubs and very low trees".

- Soils: The soils are podzols or humus podzols on the sand sheet and humic gleys and peats in very low depressions. The dominant soil materials of the podzols are dark sandy loam (topsoil – A_1 horizon), bleached sand (deep topsoil – A_2 horizon), and black cemented pan or "coffee rock" (deep subsoil – Bh, Bhs horizon).

71 Dr Hazelton identifies the soils excavated at soil pits 1, 9 and 10 as being podzols developed in situ. They are of the same soil type as described in the Kingscliff soil landscape. Dr Hazelton identifies the soils excavated at soil pits 2, 3, 4, 6 and 7 as being humus podzols with some surface lenses of peaty loams. These soils have formed in situ in depressions and dune swales as described in the Pottsville soil landscape.

72 The soils of the site, and of the Kingscliff and included Pottsville soil landscapes, do not correspond with the soils with which the Scientific Committee specifies Freshwater Wetlands are associated, namely "silts, muds or humic loams". Dr Hazelton notes that silt is substantially absent from the soils of the site. The soils of the site are not mud. The soils of the site are not loams. The soils of the Kingscliff and Pottsville soil landscapes are podzols, and have not been deposited by fluvial processes referred to in the Scientific Committee's description of the floodplains.

73 Dr Stock, a geomorphologist called by the Council, did not dispute the general proposition that the soils on the site correspond with the Kingscliff and Pottsville soil landscapes or that the soils on the site are podzols. However, Dr Stock identified in the soil profiles for the soil test pits, certain "sub-samples" which might answer other descriptions such as being loam, clay loam or sandy loams. I do not consider this to be a proper way either of interpreting the results of the soil test pits or of the Scientific

Committee's description of the edaphic criteria for the endangered ecological communities in question in this case. The endangered ecological communities in question in this case cannot exist if there be only isolated and disparate lenses, at various depths, of soil that might meet the edaphic criteria in the Scientific Committee's description of the endangered ecological community. The soils over the land in question, said to support the endangered ecological community, must be looked at fairly and as a whole. Overwhelmingly on this site, the soils do not meet the edaphic criteria of the Scientific Committee in its final determination to Freshwater Wetlands as an endangered ecological community.

74 The Council also submitted that certain components of the soils on the site could be described as silts or could form muds, as those terms are ordinarily understood having regard to dictionary definitions. The Council referred to the Macquarie Dictionary definitions of silt and mud. The Macquarie Dictionary defines "silt" as "earthy matter, fine sand, or the like, carried by moving or running water and deposited as a sediment" and "mud" as "wet, soft earth or earthy matter, as on the ground after rain, at the bottom of a pond, or among the discharges from a volcano; mire". The Council submits that certain components of the soils on the site could answer these dictionary definitions.

75 I reject the submission of the Council. The fact that these soils are podzols is evidence that they have not been carried by moving or running water and deposited on the site. They therefore would not be silts according to the Macquarie Dictionary definition of silt. Unlike the dictionary definition of silt, the dictionary definition of mud does not require the carrying by moving or running water and deposition on the land. It is much wider. Such a definition does not accord with the way in which the term "muds" is used by the Scientific Committee in its description of the Freshwater Wetlands endangered ecological community. As noted above, the specified soils, of which one is muds, are specified to be in certain topographical features which are associated with coastal floodplains. The specified soils are formed by the fluvial processes described in the

definition of flood plains and which also form the topographical features in which the soils occur.

76 The Council's submission also relies upon isolated lenses of soil material, which may form silts or muds, rather than considering the soils on the site as a whole. The soils on the site as a whole cannot properly be described as silts or muds.

77 Secondly, the Scientific Committee in the description in its final determination to list Freshwater Wetlands as an endangered ecological community, expressly excludes Freshwater Wetlands in coastal sandplains: see paragraph 9 of the final determination for Freshwater Wetlands. As the soil landscape mapping shows, the site is part of the coastal sandplain. The underlying geology of the site, being part of the Kingscliff and Pottsville soil landscapes, is aeolian and marine quartz sand sheets and dunes of the Pleistocene inner barrier system.

78 Thirdly, the Scientific Committee in the description in its final determination to list Freshwater Wetlands as an endangered ecological community refers to the work of "Keith and Scott 2005", namely D A Keith and J Scott, "Native Vegetation of Coastal Floodplains – a diagnosis of the major plant communities in New South Wales", *Pacific Conservation Biology*, 2005, Vol 11:81-104. Figure 3 of Keith and Scott maps the historical records of occurrence of major coastal floodplain plant communities on the Tweed River Floodplain. The subject site is not within the mapped area. The mapped occurrences of major floodplain coastal plant communities correlate with alluvial and estuarine soil landscapes. The close correlation is shown graphically in Dr Smith's Statement of Evidence in Reply, p 12 where he juxtapositions Morand's soil landscape map with Keith and Scott's map of occurrence of major floodplain plant communities.

79 Fourthly, the subject site is not one which is subject to the fluvial processes referred to in the Scientific Committee's definition of floodplains, namely active erosion and aggradation by channelled and overbank

stream flow with an average recurrence interval of 100 years or less. It is true that the land is low lying and is subject to flooding with an average recurrence interval of 100 years or less.

80 However, the evidence of Dr Webb, a hydrologist called by Gales, establishes that there is no channelled and overbank stream flow which could cause active erosion or aggradation. Dr Webb prepared a detailed flood model, derived from the Council's flood model. That model shows that, for flood events less than about the 20 year average recurrence interval, flood waters sourced from the Tweed River are incapable of entering the area to the west and south of the Pacific Highway, and therefore reaching the subject site. For such flood events, there may be localised ponding on the subject site, but with very low velocity.

81 For flood events of a greater than 20 year average recurrence interval, floods are likely to be similar in dynamics and sequence to, although involving smaller heights and velocity than, the 100 year flood event. There is localised ponding on the subject site with very low velocities (less than 0.1m per second). This ponding continues and expands and covers a substantial area with water flowing and rising very slowly west and north.

82 In the 100 year average recurrence interval flood event, the pond water reaches a depth of about 1 m on the subject site and is virtually still (velocity is less than 0.1m per second). Eventually when the Tweed River flood waters exceed the height of the land several kilometres to the west (around 35 hours in the 100 year event), the Tweed River waters prevent the escape of the water which has ponded over the subject site and the larger area to the west and south push the ponded water back towards the subject site also at very low velocity. When the flood eventually subsides the water escapes to the west and north. At all times on the subject site, localised ponding is dominant and the velocities are so low as to be incapable of generating any significant erosion processes.

83 During a 100 year flood event, there will not be deposition of any significant amounts of sediment. First, the water is predominantly derived from the local environment which is likely to be naturally sediment poor. Secondly, the velocities are so low that the water is incapable of entraining anything other than clay fines which will be present in very small quantities. Even then, because of the fineness of the particles, the majority are likely to stay in suspension for so long that they will be carried away with the waters when they drain away at the end of the flood. Dr Webb states that "to the extent that any particles settle, this effect is likely to be miniscule".

84 Accordingly, although the subject site is subject to inundation in flood events with an average recurrence interval of 100 years or less, there is no "active erosion" or "aggradation" by flow during these events.

85 Dr Webb's explanation of the hydrologic regime of the site is consistent with and confirmed by the observations of the soils made by Dr Hazelton and the description of the soils in the soil landscape mapping. The soils have not been formed by the fluvial processes of erosion and aggradation by channelled and overbank stream flow.

86 Finally, the particular soils on the subject site are not "associated with" coastal floodplains. As noted above, there is no association between the fluvial processes referred to in the Scientific Committee's definition of floodplains and the soils or topographical features on the subject site. The soils and topographical features for the subject site have not been formed by such fluvial processes. The vegetation on the site is a product of the soils and topographical features of the site. The vegetation also is not a product of such fluvial processes. There is no evidence of any influence of the vegetation of the subject site from vegetation communities on alluvial soil landscapes to the west of Tweed Coast Road.

Floristic and structural criteria

87 Dr Clements, a botanist and ecologist, engaged by Gales, undertook a comparison of vegetation data collected on the subject site with the characteristic species listed in the final determinations of the Scientific Committee to list Freshwater Wetlands, Swamp Sclerophyll Forest and Swamp Oak Floodplain Forest as endangered ecological communities.

88 For Freshwater Wetlands, Dr Clements recorded from all of the 32 plots over the whole site, 18% (12 species) of the 66 characteristic species listed in paragraph 1 of the Scientific Committee's final determination for Freshwater Wetlands. However, for the four plots in the vegetation community 12, the community which the Council contends is a Freshwater Wetlands endangered ecological community, namely plots 24, 28, 31 and 34, only five characteristic species were recorded, namely, *Persicaria strigosa* (a type of low growing herb), *Baumea rubiginosa* (a type of reed), *Hemarthria uncinata* and *Leersia hexandra* (both types of grasses), and *Phragmites australis* (another type of reed). This represents 7.5% of the characteristic species for Freshwater Wetlands. (In fact in any of the four plots there were no more than 4 of the characteristic species.) Dr Clements concluded "from the number of characteristic species recorded and the described plant communities, the data from Plot 22 and probably data from plots with a "sedgelands and reedlands and herbfields, and woody species are generally scarce" structure (Plots 24, 28, 31 and 34) should be compared with the other listed criteria in the Final Determination for this community".

89 I understand this conclusion of Dr Clements to be that a comparison between the species recorded in the plots in vegetation community 12 and the characteristic species for Freshwater Wetlands is not, by itself, sufficient to preclude the vegetation community being Freshwater Wetlands.

90 Mr Elks, a botanist called by Gales, similarly was not prepared on the basis only of the small number of characteristic species recorded in vegetation community 12 "to rule it [vegetation community 12] out totally" as being Freshwater Wetlands. He considered, however, other factors indicated that vegetation community 12 is not Freshwater Wetlands, including the absence of floating water plants.

91 Dr Kingston, the biodiversity program leader with the Council, considered that the low number of characteristic species recorded in vegetation community 12 might indicate it is a "possible transitional community". Dr Kingston also was of the view that Freshwater Wetlands are often dominated by one or two species, such as *Phragmites*, and therefore he "wouldn't rule it out on that basis alone".

92 Dr Smith, an ecologist called by Gales, however, considered that vegetation community 12 is "clearly depauperate in a biodiversity floristics sense". Dr Smith considered that the changes to the hydrologic regime of the site had favoured "plant species that favour wetter ground to disperse rapidly in that area". Dr Smith concluded that vegetation community 12 is "nothing like a Freshwater Wetland EEC, it doesn't have the structure, the floristics, the function, the diversity. It falls short in almost all regards".

93 On this evidence, I am not able to find that the low number of characteristic species recorded in vegetation community 12 is, by itself, sufficient reason to exclude the vegetation community from being the Freshwater Wetlands endangered ecological community.

94 However, there are other aspects of the Scientific Committee's criteria relating to floristic species and structure of the community which do indicate that vegetation community 12 is not the Freshwater Wetlands endangered ecological community.

95 The Scientific Committee's final determination for Freshwater Wetlands refers to the absence of woody species of plants; the presence of

amphibious, emergent, floating or submerged aquatic forbs, grasses or sedges; and the consequential structure of the community not involving woody species of plants and instead being sedgelands, reedlands or herbfields.

96 Paragraph 1 of the final determination states that "[t]he structure of the community may vary from sedgelands to reedlands to herbfields, and woody species of plants are generally scarce". Paragraph 4 states that Freshwater Wetlands are "dominated by herbaceous plants and have very few woody species". Paragraph 6 states: "The combination of features that distinguish Freshwater Wetlands on Coastal Floodplains from other endangered ecological communities on the coastal floodplains include its scarcity or complete absence of woody plant species and the presence of amphibious, emergent, floating or submerged aquatic forbs, grasses or sedges".

97 The five characteristic species recorded in the plots in vegetation community 12 are not woody species of plants and the current structure of vegetation community 12 is of a grassland/sedgeland. However, the present species composition and the structure of the vegetation community are products of the site's past disturbance regime. The aerial photographs taken over time reveal considerable clearance of the site over many decades. Furthermore, the evidence is that the subject site, including where vegetation community 12 occurs, is regularly slashed and grazed. Hence, the present species composition and the vegetation structure are artificial constructs and are not true indicators of the natural vegetation community.

98 The soil landscapes that occur on the site, namely Kingscliff and Pottsville, are characterised by having vegetation that is inconsistent with the floristic species and structure described by the Scientific Committee in its final determination to list Freshwater Wetlands. The Kingscliff soil landscape is characterised by having vegetation of "open-heathland forest" with wetter locations supporting "open-woodlands of broad-leaved paperbark". The

Pottsville soil landscape is also characterised by having "wet heathland in the lowest areas and tall closed paperbark forest in more elevated areas". The vegetation of both soil landscapes, therefore, is dominated by woody species of plants and the vegetation community has a corresponding structure of heathland, woodland or forest. The vegetation and the vegetation structure of the applicable soil landscapes are not consistent with those described by the Scientific Committee for Freshwater Wetlands.

99 Dr Smith's evidence is that the current structure of vegetation community 12 as grassland/sedgeland only exists because of the intervention of humans. Dr Smith states:

> "...community 12 was originally (pre-European) a dry forest and heath grading into a wet heath at lower elevations to the south west. This community has since been cleared and inundated by stormwater runoff and impeded drainage giving rise to a derived grassland/sedgeland. In the absence of ongoing grazing and slashing, this community would most likely revert to a mixture of communities 7 & 8 of Elks and Smith 2007 (Paperbark/sedgeland and Paperbark Exotic Grassland) under current management. I say this based on my examination of series of aerial photographs of the site (see Smith 2007b) which show that Paperbark trees have steadily regenerated and expanded on level sand plains subject to periodic inundation in similar situations elsewhere on Gales Holdings. The cleared areas of grassland/sedgeland north of Turnock St. currently support scattered large Paperbark trees. In my opinion, these trees would expand to cover the whole of the area north and south of Turnock St. if allowed to regenerate in the absence of ongoing slashing and grazing" (p 7 of Dr Smith's Statement of Evidence in Reply).

100 Furthermore, the evidence establishes that the vegetation in vegetation community 12 does not contain any "amphibious, emergent, floating or submerged forbs, grasses or sedges" which is stated by the Scientific Committee to be a distinguishing feature of wetlands (paragraph 6 of the final determination).

101 On this evidence, I find that the vegetation in vegetation community 12 does not meet the floristic and structural criteria in the Scientific Committee's final determination concerning the scarcity or complete absence of woody plant species; or the presence of amphibious, emergent, floating or submerged aquatic forbs, grasses or sedges; or the corresponding structure of the vegetation community as being a sedgeland or reedland or herbfield.

102 Gales also sought to exclude vegetation community 12 as being Freshwater Wetlands by reason of the specific exclusion, in paragraph 4 of the Scientific Committee's final determination, of artificial wetlands created on previously dry land. I do not find that this exception is applicable to the subject site. Although undoubtedly the construction of Turnock Street and various other drainage measures have altered the hydrologic regime so as to make the land wetter in parts than it would otherwise have been, I am not satisfied that the subject site can be described as artificial wetlands created on previously dry land. The Council tendered extracts from early deposited plans and parish maps on the subject site which show swampy ground to occur on the subject site from early times. Furthermore, the soil landscapes of the subject site, both Kingscliff and any included Pottsville soil landscapes, are consistent with the site being periodically inundated and containing wetter areas.

Conclusion on Freshwater Wetlands

103 For the reasons I have given above, I do not find that vegetation community 12 can be classified as the Freshwater Wetlands endangered ecological community.

Swamp Sclerophyll Forest

104 I am not satisfied that vegetation contained in community 6 is the ecological community described in the Scientific Committee's final

determination to list Swamp Sclerophyll Forest as an endangered ecological community. My reasons relate to the failure of vegetation community 6 to satisfy certain edaphic, topographical and locational criteria as well as certain floristic and structural criteria in the Scientific Committee's final determination for Swamp Sclerophyll Forest.

Edaphic, topographical and locational criteria

105 The Scientific Committee describes Swamp Sclerophyll Forest to be the ecological community "associated with humic clay loams and sandy loams, on waterlogged or periodically inundated alluvial flats and drainage lines associated with coastal floodplains". Again, the Scientific Committee defines floodplains as "level landform patterns on which there may be active erosion and aggradation by channelled and overbank stream flow with an average recurrence interval of 100 years or less" (paragraph 1).

106 As with the Scientific Committee's description of Freshwater Wetlands, the description of Swamp Sclerophyll Forest has three components: an edaphic component ("humic clay loams and sandy loams"), a topographical component ("waterlogged or periodically inundated alluvial flats and drainage lines") and a locational component ("associated with coastal floodplains").

107 The soils on the subject site do not satisfy the edaphic criteria. My discussion and reasons concerning the soils of the site given above in relation to Freshwater Wetlands are equally applicable to Swamp Sclerophyll Forest. Dr Hazelton's analysis of the soils of the site, and the soils described in the applicable soil landscapes of Kingscliff and Pottsville, establish that the soils are not humic clay loams or sandy loams, nor are they associated with such soils. It is not appropriate, for reasons I have stated earlier, to find disparate lenses of soil, at various depths, in soil pits that might answer the description of a loam or clay loam or sandy loam. Viewed as a whole, the soils on the subject site are not humic clay loams or sandy loams.

108 The subject site also does not satisfy the topographical criteria of being on alluvial flats and drainage lines. The subject site might by low lying and periodically inundated and might also be able to be described as a flat, but it is not an "alluvial" flat. The soils are not of alluvial origin. The flat land on the site has not formed by alluvial deposition by fluvial processes referred to in the Scientific Committee's definition of floodplains. Rather, the soils comprise sand sheets of reworked Pleistocene material. Again, my discussion and reasons on this issue given above in relation to Freshwater Wetlands are applicable to Swamp Sclerophyll Forest.

109 There is also no drainage line on the subject site. Although Dr Stock in his written evidence in chief, filed before the hearing, suggested that an aerial photograph in August 1962 may have revealed a drainage line on the subject site north of Turnock Street, later investigation and consideration disproved this suggestion. Mr Elks, Dr Smith, Dr Hazelton and Mr Webb were all of the opinion that no drainage line is on the site.

110 Mr Elks, who is trained in aerial photographic analysis, undertook closer and better examination of the aerial photograph in question, another aerial photograph taken 2 ½ hours later on the same day in August 1962 and other aerial photographs at other dates, but found no such drainage line.

111 Dr Hazelton carried out a transect of soil test pits across the location of the putative drainage line and found no evidence in the soil of its existence. If a drainage channel existed and had deposited soil across the site, distinct layering in the soil/sand profile would have been observed and podzols would not have been present and well developed. However, such layers are entirely absent from the site and podzols are well developed, indicating the absence of fluvial processes for several thousand years.

112 Dr Webb undertook a survey of the site. The survey demonstrated that there is no low point at, or evidence of slopes surrounding, the location of

the putative drainage line, either of which would have suggested the existence of the drainage line.

113 Dr Stock himself conceded in oral evidence he had been mistaken in seeing a drainage line. He now accepted that today there is no evidence of a drainage line on the subject site. At best, any stream might have commenced in the Pleistocene landscape (the Pleistocene ended about 10,000 years ago). However, Dr Stock thought any such Pleistocene stream may have been buried by sand in the Holocene era, some 7,000 years ago. He accepted that podzolisation takes in the order of 5,000 years to get the separation of layers that is characteristic of podzolisation.

114 Even if there were to have been such a Pleistocene stream, it would not be relevant. The Scientific Committee's description of Swamp Sclerophyll Forest is of an ecological community that exists today "on...drainage lines" that must still be in existence today, with the concomitant alluvial soils, and influencing that ecological community.

115 Vegetation community 6 is not "associated with coastal floodplains" for the same reasons I have given above in relation to Freshwater Wetlands.

Floristic and structural criteria

116 Dr Clements' comparison of vegetation data from all plots on the subject site with the characteristic species of Swamp Sclerophyll Forest listed in paragraph 1 of the Scientific Committee's final determination showed that there was a total of 58% (34 species) of the 59 characteristic species. However, of the two plots in vegetation community 6, namely plots 3 and 4, only seven characteristic species were recorded, namely *Blechnum* sp and *Hypolepis muelleri* (both ferns), *Parsonsia straminea* (a type of vine), *Elaeocarpus reticulatus* (a small tree), *Omalanthus populifolius* (a small shrub or tree), *Gahnia* sp (a sedge) and *Phragmites australis* (a type of reed). This represents 12% of the characteristic species for Swamp Sclerophyll Forest. Plots 3 and 4 had seven and three characteristic

species respectively. Dr Clements did not identify plots 3 and 4 as being plots which have a sufficient number of characteristic species to warrant comparison with the other listed criteria in the final determination of Swamp Sclerophyll Forest (although other plots were so identified).

117 Both Mr Elks and Dr Smith did not consider that there were sufficient species in vegetation community 6 to correspond with Swamp Sclerophyll Forest. Dr Kingston, however, did not consider that the low number of characteristic species was sufficient to exclude vegetation community 6 from being Swamp Sclerophyll Forest. He considered "the key thing for me was the Blechnums and the Gahnia at very high density and very high cover abundances and the ferns".

118 Again, I do not consider the limited number of characteristic species, by itself, to be sufficient to exclude vegetation community 6 from being Swamp Sclerophyll Forest. However, apart from the limited number of characteristic species, there are other floristic and structural criteria which vegetation community 6 does not satisfy.

119 First, there is an absence of the key canopy trees in vegetation community 6. Paragraph 4 of the Scientific Committee's final determination for Swamp Sclerophyll Forest states that it "has an open to dense tree layer of eucalypts and paperbarks...The most widespread and abundant dominant trees include *Eucalyptus robusta* (swamp mahogany), *Melaleuca quinquenervia* (paperbark)...Other trees may be scattered throughout at low abundance or may be locally common at few sites, including *Callistemon salignus* (sweet willow bottlebrush), *Casuarina glauca* (swamp oak) and *Eucalyptus resinifera* subsp *hemilampra* (red mahogany), *Livistona australis* (cabbage palm) and *Lophostemon suaveolens* (swamp turpentine).

120 Paragraph 6 states: "The combination of features that distinguish Swamp Sclerophyll Forest on Coastal Floodplains from other endangered ecological communities on the coastal floodplains include: its relatively

dense tree canopy dominated by *Eucalyptus robusta, Melaleuca quinquenervia* or *E. botryoides*, the relatively infrequent occurrence of other eucalypts, *Casuarina glauca* or *Lophostemon suaveolens*; the occasional presence of rainforest elements as scattered trees or understorey plants; and the prominence of large sedges and ferns in the groundcover."

121 None of the tree species recorded in the plots in vegetation community 6 corresponds with the eucalypts, paperbarks or other trees noted as being characteristic trees of Swamp Sclerophyll Forest. Mr Elks considered this to be of importance and "the major problem with having community 6 listed as Swamp Sclerophyll Forest". Dr Smith agreed. Dr Smith also pointed out that the trees that were in fact growing in community 6 are Doughwood (*Melicope elleryana*), Umbrella Cheese tree (*Glochidion sumatranum*), Umbrella tree (*Schefflera actinophylla*) and the weed lantana. The Blackwood Wattles (*Acacia melanoxylon*) that previously had grown on this part of the site, have died by reason of the increased inundation of the site caused by the construction of Turnock Street and other drainage works. The trees that do occur on the site are responsive to changes in hydrological conditions and result in what Dr Smith describes as a "man made community".

122 Dr Kingston's response was to refer to the Scientific Committee's caveat in paragraph 2 of the final determination for Swamp Sclerophyll Forest that many species in the list of characteristic species in paragraph 1 may be present in only one or two sites or in low abundance. Hence, Dr Kingston considered it was not critical that the key tree species were absent from vegetation community 6. Dr Kingston also said that "Swamp Sclerophyll Forest can include patches and areas where the Paperbarks and so on don't exist at all".

123 In my opinion, the evidence of Mr Elks and Dr Smith is to be preferred to that of Dr Kingston. In the circumstances of this particular vegetation community 6, the absence of any of the key trees identified by the

Scientific Committee as distinguishing Swamp Sclerophyll Forest from other communities on coastal floodplains and, conversely, the presence of a number of different tree species not associated with Swamp Sclerophyll Forest, are strong indicators that vegetation community 6 is not the Swamp Sclerophyll Forest endangered ecological community.

Conclusion on Swamp Sclerophyll Forest

124 For these reasons, I am not satisfied that vegetation community 6 can be properly characterised as comprising Swamp Sclerophyll Forest endangered ecological community.

Swamp Oak Floodplain Forest

125 I am not satisfied that vegetation community 4 is the ecological community described by the Scientific Committee in its final determination listing Swamp Oak Floodplain Forest as an endangered ecological community. Vegetation community 4 does not satisfy the edaphic, hydrologic or locational criteria specified by the Scientific Committee in its Final Determination for Swamp Oak Floodplain Forest.

126 The Scientific Committee in its final determination states that Swamp Oak Floodplain Forest is the ecological community "associated with grey-black clay-loams and sandy loams, where the groundwater is saline or sub-saline, on waterlogged or periodically inundated flats, drainage lines, lake margins and estuarine fringes associated with coastal floodplains". Floodplains are again defined by the Scientific Committee to be "level landform patterns on which there may be active erosion and aggradation by channelled and overbank stream flow with an average recurrence interval of 100 years or less" (paragraph 1).

127 This description of the endangered ecological community has four components: an edaphic component ("gray-black clay-loams and sandy

loams"), a hydrologic component ("the groundwater is saline or sub-saline"), a topographical component ("waterlogged or periodically inundated flats, drainage lines, lake margins and estuarine fringes") and a locational component ("associated with coastal floodplains").

128 The soils on the subject site do not satisfy the edaphic criteria. They cannot be characterised as grey-black clay-loams and sandy loams. My reasons are the same as given above in relation to the soils of Freshwater Wetlands.

129 The evidence also does not establish that the groundwater of the subject site is "saline or sub-saline". Dr Smith, in his statement of evidence in reply, summarises the evidence on salinity as follows:

> "Soil and soil water salinity on the site has been measured by Morand 1996 (Appendix 7.2.7) and is described as very low above 100 cm depth and low at 100-150 cm depth. These results are consistent with more recent measurements of groundwater conductivity on the site (129-448 mS/cm, see Attachment 2) which are within the range for freshwater rivers (0-800 mS/cm, SA.waterwatch.org.au/sw_salinity.htm)" (p 8).

130 The hydrologic criteria is, therefore, not satisfied.

131 The subject site could be said to be on waterlogged or periodically inundated flats and, in this respect, might be thought to satisfy the topographical criteria. However, neither the soils of the site nor the topographic feature of being a water logged or periodically inundated flat are "associated with coastal floodplains" for the reasons given above in relation to Freshwater Wetlands.

132 For these reasons, I am not satisfied that vegetation community 4 is part of the Swamp Oak Floodplain Forest endangered ecological community.

Conclusion on endangered ecological communities

133 The result is that none of the vegetation communities that will be affected by filling of the site and that are claimed by the Council to be endangered ecological communities, can properly be so characterised.

Whether a species impact statement required?

134 The above conclusion that none of the vegetation communities on the site that will be affected by the proposed development are endangered ecological communities means that there is no warrant to evaluate whether the proposed development is likely to significantly affect any endangered ecological community and, hence, whether a species impact statement is required.

Offsets

135 Gales proposes to conserve four areas of the subject site:

(a) An area of littoral rainforest (said by the Council to be the endangered ecological community of Littoral Rainforest in the NSW North Coast Sydney Basin and South East Corner Bioregions) located in the northeast of the site behind the houses along Pearl Street (on Lots 1, 2 and 3 in DP 781714). This area is to be the subject of a restriction on user burdening the land preventing the removal of littoral rainforest vegetation from that land. The need to impose a restriction on user will be required by a condition of consent.

(b) An area in the southeast of the subject site, south of Turnock Street (being part of lot 13 in DP 871753), comprising habitat for the endangered species of the Mitchell's Rainforest Snail. This area is

to be the subject of a restriction on user and public positive covenant burdening the land. A restriction on user will, in effect, prevent any activity on the land that would adversely affect the vegetation, and hence the habitat of the Mitchell's Rainforest Snail, on the land. The need to impose the restriction on user and public positive covenant will be required by a condition of consent.

(c) A Wallum Froglet habitat area and refuge area for the endangered species of the Wallum Froglet, to be located to the north of Turnock Street. These areas are to be the subject of extensive conditions of consent, including requiring the preparation of a Wallum Froglet Management Plan.

(d) An area to the south of Turnock Street (comprising parts of Lots 11 and 12 of DP 871753), being an area connected by the new box culvert under Turnock Street to the Wallum Froglet habitat area and refuge area to the north of Turnock Street. This area is to be the subject of a restrictive covenant for conservation purposes in respect of the Wallum Froglet. The restrictive covenant will, in effect, prevent any activity that would adversely affect the vegetation, and hence the habitat of the Wallum Froglet, on that land. The need to impose the restrictive convent will be required by a condition of consent.

136 I am satisfied that these four areas to be conserved are adequate offsets to compensate for the areas of vegetation which will be lost by reason of the filling of the subject site. The conditions of consent should be amended in the manner discussed below to better ensure the conservation of these areas.

137 A substantial basis for the Council's argument that inadequate offsets have been offered by Gales was that the vegetation to be lost by filling of the land comprised endangered ecological communities. As I have found

that the vegetation is not part of an endangered ecological community, this basis for objection is removed.

138 The vegetation to be lost is predominantly native vegetation and does have habitat value. However, loss of the vegetation is a necessary consequence of carrying out the Council's planning strategy for the subject site of urban development. The land is low lying and needs to be raised by filling in order to facilitate urban development. Such filling and subsequent urban development of the land necessarily must result in the loss of vegetation on the site. This loss is, therefore, a known and intended consequence of the Council's planning strategy for the site.

139 It is true that the objectives of the 2(c) Urban Expansion zone contemplate urban expansion consistent with environmental constraints and ensuring that sensitive environmental areas are protected from the adverse impacts of development. However, these objectives can be achieved by the conservation measures proposed by Gales. The area of littoral rainforest (a potential endangered ecological community), an area of habitat for the endangered species of the Mitchell's Rainforest Snail and the areas of habitat both north and south or Turnock Street for the endangered species of the Wallum Froglet, each will be protected from development. The areas of vegetation to be filled, I have found, are not endangered ecological communities.

140 Accordingly, I consider that the proposed development is consistent with environmental constraints and ensuring sensitive environmental areas are protected from the impacts of development. I consider that the proposed offsets are adequate in the circumstances.

Conditions

141 The parties have provided a set of draft conditions that were filed on 21 April 2008 (and which has been marked as Exhibit 33). Although most

conditions were agreed, some conditions remain in dispute between the parties. The parties have provided oral submissions as well as written documents addressing the areas of contention. I will deal with each disputed condition. As will be seen, it will be necessary for the parties to revise the conditions of consent to address the reasons for judgment. I propose directions at the end of the judgment for this process to occur.

142 The Council proposes a number of conditions as deferred commencement conditions in Schedule A. The applicant objects to these on a variety of grounds.

143 First, the Council proposes a period of two years within which the applicant should produce evidence as to the matters the subject of the deferred commencement condition. The applicant instead proposes a period of four years. The applicant may have misinterpreted this period of time to be the time for lapsing of the consent if commencement is not achieved. I say this because of the applicant's reference in its submissions to s 96(5) of the *Environmental Planning and Assessment Act 1979* which is only concerned with the lapsing of a development consent. The time period for lapsing does not commence until the deferred commencement conditions have been satisfied. Accordingly, the period in s 96(5) is not relevant. The question is what period of time is reasonable in order to provide the evidence to the Council that the deferred commencement conditions have been satisfied.

144 The major work required by the deferred commencement conditions concerns the Wallum Froglet monitoring. The Wallum Froglet monitoring entails the preparation and agreement with the Council of the Wallum Froglet monitoring plan prior to commencement of monitoring; the carrying out, over a 12 month period, of monitoring in accordance with the approved monitoring plan; and the preparation and submission to the Council of a final report on the monitoring. A period of 2 years (6 months for preparation of the monitoring plan, 12 months for monitoring and 6

months for preparation and submission of the final report) ought to be adequate to carry out these activities.

145 There are also other matters to be attended to as part of the deferred commencement conditions, notably reassessing, monitoring and designing the drainage system and water treatment train (Condition G). This requires monitoring for a period of no less than 6 months. Such work can be done simultaneously with the activities in relation to the Wallum Froglet monitoring.

146 I therefore consider two years to be an adequate time for the applicant to satisfy the deferred commencement conditions.

147 The Council proposes in Condition B that the Wallum Froglet precinct be reflected in a s 88B instrument. Such a requirement is supplementary to the operational conditions of consent which require the establishment and maintenance of the Wallum Froglet precinct. The applicant objects to the condition on the basis that property rights should not be created, varied or destroyed until the consent is activated. I agree with the applicant that such a condition should not be a deferred commencement condition. However, I consider it would be appropriate as an operational condition. I note that the applicant proposes a restrictive covenant under s 88E of the *Conveyancing Act* on another part of the Wallum Froglet habitat, namely, lots 11 and 12 of DP 871753 (see operational Conditions 1C and the second restrictive covenant). I consider that, for consistency, a s 88B instrument should apply to the Wallum Froglet precinct.

148 The applicant expresses concern about the land being subject to a s 88B instrument if the Wallum Froglet were to cease to exist in the area. However, the same issue arises with respect to lots 11 and 12, which are also part of the Wallum Froglet habitat, and which will be subject to a restrictive covenant under s 88E. If the purposes of the restrictions in each case can no longer be achieved, there are mechanisms under the *Conveyancing Act* for the restrictions to be discharged. I therefore

consider that a condition along the lines of Condition E should be retained but as an operational condition.

149 The Council proposes in Condition C that the applicant provide compensation for the loss of 14 hectares of endangered ecological community. The applicant objects to this condition. As I have found earlier that the proposed development will not affect any endangered ecological community and further that the conservation areas proposed by the applicant are adequate, this condition should be deleted.

150 The Council proposes in Condition D that the applicant lodge a management plan for the areas proposed to be conserved on the site. The applicant objects on the basis that the restrictions on user proposed for the areas, which will be required by the operational conditions of consent, will be adequate. I agree with the Council that there ought to be a positive obligation to manage the areas that the applicant proposes to conserve and that there not merely be a negative restriction on user. In fact, however, such a positive obligation is imposed in relation to the Wallum Froglet precinct by the operational conditions of consent. There is also a positive obligation in the applicant's proposed Condition 1D to prepare and implement a management plan in respect of the habitat of the Mitchell's Rainforest Snail on Lot 13 of DP 871753.

151 The two areas in respect of which there is not a positive obligation to manage the areas to be conserved are the littoral rainforest on Lots 1, 2 and 3 of DP 781714 and the Wallum Froglet habitat on Lots 11 and 12 in DP 871753. I consider that a similar obligation to that required by Condition 1D for Lot 13 in DP 871753 should be imposed in respect of Lots 1, 2 and 3 in DP 781714 for the littoral rainforest and Lots 11 and 12 in DP 871753 for the Wallum Froglet habitat. This can be by way of an operational condition equivalent to Condition 1D.

152 The Council proposes in Condition E that the applicant surrender any existing use rights in relation to the land. The applicant objects to this on

the basis that no rights should be surrendered before commencement of works inconsistent with the assertion of those rights. I agree with the applicant and this condition should be deleted.

153 The Council proposes in Condition F that the applicant lodge a revised haulage route to minimise tree loss as well as lodging details for the rehabilitation of the temporary haul route. The applicant does not object to this condition in principle, however, says that it ought to be amended to acknowledge that the amended route must still allow for heavy haulage vehicles to turn on a conventional swept path. The applicant's submission is reasonable and can be accommodated by redrafting the condition by adding at the end of the second sentence the words "and such that the alignment is subject to trucks being able to turn on reasonable curves".

154 The Council proposes in Condition H that the applicant lodge a revised management plan showing how any adverse impacts on the development as a whole are to be mitigated. The applicant objects on the basis that there are already management plans for the project and these do not need to be duplicated. I agree with the applicant. The operational conditions require a variety of management plans and these are adequate. Condition H should be deleted.

155 Turning to the operational conditions in Schedule B, Gales proposes Conditions 1A-1D dealing with the restrictions on user burdening Lots 1, 2 and 3 in DP 781784 (concerning the littoral rainforest), Lot 13 in DP 871753 (concerning the Mitchell's Rainforest Snail) and Lots 11 and 12 in DP 871753 (concerning the Wallum Froglet). I note that there seems to be a typographical error in Condition 1C in that reference to Lot 12 has been omitted, although that lot is referred to in the annexed second restrictive covenant. This should be corrected. I consider that the applicant's conditions 1A to 1D are reasonable and ought to be imposed. They should be supplemented in the way that I have earlier referred to when dealing with the deferred commencement conditions.

156 Condition 2(a) needs to be amended to reflect the agreement between the parties at the hearing, by deleting the words "with s 96(1)(4) of".

157 The Council proposes in Conditions 32(c), (d) and (i), 33(c), 34(b) and 35(h) that various drainage easements benefiting the Council be created over various drainage works prior to the commencement of work. Gales objects to providing these drainage easements, except for that referred to in Condition 35(h), on the ground that they are not necessary, there is no nexus with the proposed development, and the Council is effectively trying to obtain what can only be obtained through a proper s 94 contributions plan. I agree with the applicant and consider that the drainage easements referred to in conditions 32(c), (d) and (i), 33(c) and 34(b) should not be imposed at this stage of the development and these parts of the conditions should be deleted. The drainage easement in condition 35(h) can remain. The value of that easement can be taken into account in determining the monetary contributions under Condition 10. The issue of creation of drainage easements can be revisited at the subdivision stage when the need for drainage easements might better arise.

158 Finally, I note that through the course of the hearing various modifications of the development were proposed and agreed upon. For example, the design for the Wallum Froglet Habitat was revised in the plans in Exhibit M and the location and design of the proposed conveyor was revised as shown in the Addendum to Amended Statement of Environmental Effects in Exhibit T. These revised designs are not incorporated in the plans referred to in condition 1 in Schedule B of the conditions of consent. An audit should be undertaken of the conditions of consent to ensure that such modifications are incorporated directly (by reference to the revised plans or documents) or indirectly (such as by a requirement in a condition that a revised plan or document be prepared).

Conclusion

159 For the foregoing reasons, I am of the opinion that development consent ought to be granted to the proposed development subject to the conditions of consent that have been filed being amended to deal with the reasons for judgment. I propose making the directions below to allow for the revision of the conditions of consent.

160 The following directions are made:

1. The Council is to file and serve amended conditions by close of business on 21 July 2008.

2. Gales is to file and serve a response to the amended conditions by close of business on 28 July 2008.

3. Leave is granted for either party to restore the matter on 24 hours notice if there is disagreement on compliance with these directions or any party wishes to have an oral hearing to make submissions on the amended conditions.

5. If leave is not sought to restore the matter, final orders will be made in Chambers after 28 July 2008.

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I CERTIFY THAT THIS AND THE 47 PRECEDING PAGES ARE A TRUE COPY OF THE REASONS FOR THE JUDGMENT OF THE HONOURABLE JUSTICE B.J. PRESTON

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Associate

Date 14 July 2008

gure 5. Vegetation Map of Gales Holdings West Kingscliff