4 Statutory framework

4.1 Environmental Planning and Assessment Act 1979

The GGP approvals (PA 08_0154 and CA 08_0154) were granted under Part 3A of the EP&A Act in 2009. Part 3A was repealed by the *Environmental Planning and Assessment Amendment (Part 3A Repeal) Act 2011* (the Part 3A Repeal Act) on 1 October 2011. Under transitional arrangements in Schedule 6A of the EP&A Act, both the GGP approvals (as approved under CA 08_0154 and under PA 08_0154) are 'transitional Part 3A projects', and Part 3A of the EP&A Act (as in force immediately before the repeal and as modified under Schedule 6A of the EP&A Act) continues to apply in respect of the GGP.

Accordingly, this modification application is made under Section 75W of the EP&A Act which enables the Minister to modify a concept plan approval and a project approval granted under Part 3A of the EP&A Act. Section 75W of the EP&A Act states:

(1) In this section:

Minister's approval means an approval to carry out a project under this Part, and includes an approval of a concept plan.

modification of approval means changing the terms of a Minister's approval, including:

- (a) revoking or varying a condition of the approval or imposing an additional condition of the approval, and
- (b) changing the terms of any determination made by the Minister under Division 3 in connection with the approval.
- (2) The proponent may request the Minister to modify the Minister's approval for a project. The Minister's approval for a modification is not required if the project as modified will be consistent with the existing approval under this Part.
- (3) The request for the Minister's approval is to be lodged with the Director-General. The Director-General may notify the proponent of environmental assessment requirements with respect to the proposed modification that the proponent must comply with before the matter will be considered by the Minister.
- (4) The Minister may modify the approval (with or without conditions) or disapprove of the modification.

The following sections of the EP&A Act, in accordance with the provisions of Schedule 6A, are applicable to the proposed modification:

- Section 75R(3) which provides that environmental planning instruments (EPIs) (other than SEPPs) do not apply to an approved Part 3A project;
- Section 75J(3) which states that, in deciding whether to grant project approval, the Minister for Planning and Infrastructure may (but is not required to) take into account the provisions of any EPI that would not (because of Section 75R) apply to a Part 3A project if approved;

- Section 75U which provides that the following authorisations are not required for an approved Part 3A project:
 - Coastal Protection Act 1979 (Coastal Protection Act): concurrence under Part 3 from the Minister administering that Part of the Act;
 - Fisheries Management Act 1994: permit under Sections 201, 205 or 219 for works or structures in a waterway;
 - Heritage Act 1977 (Heritage Act): approval under Part 4 to disturb an item with an Interim Heritage Order or listed on a State Heritage Register, or an excavation permit under Section 139;
 - National Parks and Wildlife Act 1974 (NPW Act): Aboriginal heritage impact permit under Section 90;
 - Native Vegetation Act 2003 (NV Act): authorisation to clear native vegetation;
 - Rural Fires Act 1997: bushfire safety authority under Section 100B; and
 - Water Management Act 2000 (WM Act): water use approval under Section 89, a water management work approval under Section 90, or an activity approval under Section 91 of the WM Act; and
- Section 75V which provides that there are a number of authorisations that must be issued in terms consistent with the Part 3A approval, if such approval is required for the conduct of the approved project. The relevant authorisations for the pipeline include:
 - an environment protection licence (EPL) under Chapter 3 of the *Protection of the Environment Operations Act 1997* (POEO Act) (for any of the purposes referred to in Section 43 of that Act);
 - a consent under Section 138 of the Roads Act 1993; and
 - a licence under the *Pipelines Act 1967* (Pipelines Act).

An assessment of the proposed modification against the objects of the EP&A Act is given in Chapter 12.

4.2 Other NSW legislation

4.2.1 Coastal Protection Act 1979

The Coastal Protection Act provides for the protection of the coastal environment. Under Part 3 of the Coastal Protection Act, concurrence from the Minister for the Environment is required for certain development within the coastal zone.

The proposed pipeline corridor realignment within the Tomago section is within the coastal zone of NSW as mapped by DP&I (Coastal Zone - Greater Metropolitan Region Map 1). However, concurrence from the Minister under Part 3 of the Coastal Protection Act is not required for the proposed modification as detailed in Section 4.1.

4.2.2 Gas Supply Act 1996

The Gas Supply Act 1996 (Gas Supply Act) aims to regulate gas reticulation and gas supply in NSW. Under Section 5 of the Gas Supply Act operation of a distribution pipeline is prohibited without a reticulator's authorisation. A distribution pipeline is defined as:

the gas pipes and associated equipment that are used to convey and control the conveyance of natural gas to the premises of customers, but does not include:

- (a) any pipeline in respect of which a licence is in force under the *Pipelines Act 1967* (other than a pipeline that the regulations declare to be, or to form part of, a distribution pipeline); or
- (b) any gas installation; or
- (c) any gas pipe or associated equipment that is wholly situated on land owned by the person who owns or controls the gas pipe or equipment; or
- (d) any gas pipe or associated equipment that the regulations declare not to be, or not to form part of, a distribution pipeline.

The pipeline subject of the proposed modification does not fall under the definition of a 'distribution pipeline' under the Gas Supply Act, because, once the pipeline licence is issued, it will fall within the first exclusion in the definition of 'distribution pipeline'.

4.2.3 Heritage Act 1977

The Heritage Act aims to protect the natural and cultural history of NSW. The Heritage Act protects heritage items listed on the State Heritage Register maintained by the NSW Heritage Office under the Heritage Act. The proposed modification would not impact on any items listed on the State Heritage Register as detailed in Section 10.6.

4.2.4 Hunter Water Regulation 2010

The *Hunter Water Regulation 2010* makes provision for the regulation of certain activities within areas declared to be special areas under the *Hunter Water Act 1991*. The proposed realigned pipeline within the Tomago and Seaham sections is within the Tomago Sandbeds Catchment Area and Williams River Catchment Area, respectively, which are identified as special areas within the Act by Clause 5 of the *Hunter Water Regulation 2010*.

Under the regulation, activities that pollute waters cannot be undertaken within special areas. Measures will be in place to ensure that pollution of waters does not occur as a result of the proposed modification, as described in Chapter 10.

4.2.5 National Parks and Wildlife Act 1974

The NPW Act aims to conserve nature and objects, places or features of cultural value within the landscape and contains specific provisions protecting Aboriginal objects and Aboriginal places. The impacts of the proposed modification on Aboriginal objects and places are detailed in Chapter 7. An Aboriginal heritage impact permit under Section 90 of the NPW Act is not required for approved Part 3A projects, as detailed in Section 4.1.

4.2.6 Native Vegetation Act 2003

The NV Act regulates the clearing of native vegetation in NSW. Similar to most sections within the approved pipeline corridor, the construction of the proposed pipeline corridor realignments will require the clearing of native vegetation. However, no authorisation under the NV Act is required for the proposed modification as discussed above in Section 4.1.

4.2.7 Petroleum (Onshore) Act 1991

The *Petroleum (Onshore) Act 1991* (PO Act) regulates the exploration and production of petroleum in NSW. The GGP requires a PPL under the PO Act prior to commencement of the proposed petroleum production operations within the Stage 1 Gas Field Development Area. The proposed modification will not result in any additional licensing requirements under the PO Act.

4.2.8 Pipelines Act 1967

The Pipelines Act regulates the construction and operation of pipelines within NSW. The GGP requires a licence under Part 3 of the Pipelines Act. This includes for construction and operation of the pipeline subject of the proposed modification. AGL has submitted an application to NSW Trade and Investment in accordance with Clause 13 of the Pipelines Act. This application included the four proposed pipeline corridor realignments within this proposed modification.

4.2.9 Protection of the Environment Operations Act 1997

The POEO Act is the principal NSW environmental protection legislation administered by the EPA. The POEO Act requires that scheduled activities defined in Schedule 1 of the Act obtain and operate under an EPL which includes criteria and monitoring requirements for environmental pollution.

In the AECOM (2009a) EA, the GGP was determined to be a scheduled activity under Schedule 1, Clause 31 which includes production of more than 5 PJ of methane gas; however, subsequent amendments to Schedule 1 of the POEO Act have excluded this activity from clause 31 and inserted it with clause 9A.

In accordance with Section 75V of the EP&A Act described above, an EPL application for an approved Part 3A project (such the GGP) cannot be refused and must be substantially consistent with the approval and any proposed modification.

4.2.10 Roads Act 1993

The Roads Act regulates activities that may impact on public roads in NSW. The GGP requires approvals under Section 138 of the Roads Act for construction of pipeline under affected public roads. The proposed pipeline corridor realignments also include these requirements within the Millers Forest section (Raymond Terrace Road and Turners Road crossings) and the Tomago section (Pacific Highway and Woodberry Road crossings). As detailed in Section 4.1, an approval under Section 138 of the Roads Act is to be issued in terms that are consistent with a Part 3A approval.

4.2.11 Rural Fires Act 1997

Under the *Rural Fires Act 1997*, the owner or occupier of the land is obligated to take precautions to prevent the start or spread of bushfires on their land. Parts of the proposed pipeline corridor realignments are within bushfire prone-land Vegetation Category 1 and the 100 m Vegetation Buffer under the relevant local instruments described in Section 4.3.2. Potential bushfire hazards to the proposed modification are detailed in Section 10.10.

4.2.12 Threatened Species Conservation Act 1995

The TSC Act provides legal status for biota of conservation significance in NSW. The impacts of the proposed modification on threatened flora and fauna species and communities listed under the TSC Act and their habitats are discussed in Chapter 6 and Appendix C.

4.2.13 Water Management Act 2000 and Water Act 1912

The Water Act 1912 aims to ensure the sustainable management of water resources in the State, primarily through licences and approvals for the extraction and use of water from rivers and groundwater aquifers. The WM Act applies to parts of the State which are subject to Water Sharing Plans. Those areas of the State not covered by such plans are managed in accordance with the Water Act 1912.

The proposed pipeline corridor realignments are within the Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources. Therefore, the WM Act applies to the proposed modification.

However, approvals under sections 89 to 91 of the WM Act are not required for a Part 3A project as detailed in Section 4.1.

4.3 NSW policies

A range of EPIs created under the EP&A Act provide further detailed guidance and regulation for development at a State and local level.

In accordance with sections 75J and 75O of the EP&A Act, in deciding whether or not to approve a Part 3A project, the Minister may (but is not required to) take into account the provisions of any EPI. As this is a discretionary matter for the Minister, a range of EPIs have been considered in relation to the proposed modification.

4.3.1 State environmental planning policies

The following SEPPs are of relevance to the proposed modification:

- State Environmental Planning Policy (Major Development) 2005;
- State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries)
 2007:
- State Environmental Planning Policy (Infrastructure) 2007;
- State Environmental Planning Policy No. 14 Coastal Wetlands;
- State Environmental Planning Policy No. 33 Hazardous and Offensive Industries;

- State Environmental Planning Policy No. 44 Koala Habitat Protection;
- State Environmental Planning Policy No. 55 Remediation of Land;
- State Environmental Planning Policy No. 71 Coastal Protection; and
- Williams River Catchment Regional Environmental Plan 1997.

These policies are discussed in relation to the proposed modification below.

i State Environmental Planning Policy (Major Developments) 2005

The State Environmental Planning Policy (Major Development) 2005 (Major Development SEPP) is the primary instrument which defines 'major projects' that are eligible to be assessed under Part 3A of the EP&A Act. The GGP met the relevant criteria specified under Schedule 1 of the Major Development SEPP and was therefore classified as a 'Major Project' and assessed and approved under Part 3A of the EP&A Act. As previously stated, given that the GGP was granted Project approval under Part 3A of the EP&A Act, the proposed modification is defined as a transitional Part 3A project under Schedule 6A of the EP&A Act.

ii State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007

The State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP) recognises the importance of mining, petroleum production and extractive industries within the State. The proposed pipeline corridor realignments fit within the definition of 'petroleum related works' under the Mining SEPP. 'Petroleum production' includes 'the construction, operation and decommissioning of associated petroleum related works'.

Clause 7(2) of the Mining SEPP permits development to be carried out with consent including, but not limited to:

- petroleum production on land on which development for the purposes of agriculture or industry may be carried out (with or without development consent); and
- petroleum production in any part of a waterway, an estuary in the coastal zone or coastal waters of the State that is not in an environmental conservation zone.

The proposed modification is on land on which development for the purpose of agriculture or industry may be carried out or is within a waterway and is, therefore, permissible with consent under Clause 7(2) of the Mining SEPP.

Clause 9A(1) of the Mining SEPP prohibits coal seam gas development on or under land within a coal seam gas exclusion zone or buffer zone. A coal seam gas exclusion zone includes land within a residential zone, or future residential growth area land. A buffer zone means land not within a coal seam gas exclusion zone, but is within 2 km of any such zone. Residential zone is defined by the Mining SEPP to include any of the following land use zones or a land use zone equivalent to any of those zones:

- Zone R1 General Residential;
- Zone R2 Low Density Residential;
- Zone R3 Medium Density Residential;

- Zone R4 High Density Residential; and
- Zone RU5 Village.

No parts of the realigned pipeline are within coal seam gas exclusion zones. Parts of the Millers Forest and Tomago sections are within buffer zones as shown in Figure 4.1. The proposed modification is considered to be development for the purposes of a pipeline that is ancillary to coal seam gas development. This is permissible on land within a buffer zone by virtue of Clause 9A(4) of the Mining SEPP.

Part 3 of the Mining SEPP sets out matters the consent authority must consider before determining an application for consent for development for the purposes of petroleum production. Assessment of the proposed modification against the relevant matters has been undertaken as part of this EA, as summarised in Table 4.1.

Table 4.1 Consideration of relevant Mining SEPP, Part 3 matters

Matter	Addressed in this EA
12 Compatibility of proposed mine, petroleum production or extractive industry with other land uses	
Before determining an application for consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must:	
(a) consider:	
(i) the existing uses and approved uses of land in the vicinity of the development, and	Chapters 2, 8, 9 and 10
(ii) whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development, and	Chapters 8, 9 and 10
(iii) any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses, and	Chapters 8, 9 and 10
(b) evaluate and compare the respective public benefits of the development and the land uses referred to in paragraph (a) (i) and (ii), and	Chapter 12
(c) evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a) (iii).	Chapter 12
14 Natural resource management and environmental management	
1) Before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring that the development is undertaken in an environmentally responsible manner, including conditions to ensure the following:	
(a) that impacts on significant water resources, including surface and groundwater resources, are avoided, or are minimised to the greatest extent practicable,	Chapter 10
(b) that impacts on threatened species and biodiversity, are avoided, or are minimised to the greatest extent practicable,	Chapter 6
(c) that greenhouse gas emissions are minimised to the greatest extent practicable.	Chapter 10
(2) Without limiting subclause (1), in determining a development application for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider an assessment of the greenhouse gas emissions (including downstream emissions) of the development, and must do so having regard to any applicable State or national policies, programs or guidelines concerning greenhouse gas emissions.	Chapter 10
17 Rehabilitation	
(1) Before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring the rehabilitation of land that will be affected by the development.	Chapter 2

Table 4.1 Consideration of relevant Mining SEPP, Part 3 matters

Matter	Addressed in this EA
(2) In particular, the consent authority must consider whether conditions of the consent should:	
(a) require the preparation of a plan that identifies the proposed end use and landform of the land once rehabilitated, or	Chapter 2
(b) require waste generated by the development or the rehabilitation to be dealt with appropriately, or	Chapter 2
(c) require any soil contaminated as a result of the development to be remediated in accordance with relevant guidelines (including guidelines under section 145C of the Act and the Contaminated Land Management Act 1997), or	Chapters 2 and 10
(d) require steps to be taken to ensure that the state of the land, while being rehabilitated and at the completion of the rehabilitation, does not jeopardize public safety.	Chapter 2

iii State Environmental Planning Policy (Infrastructure) 2007

The State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) aims to facilitate the effective delivery of infrastructure across the State. Clause 53 of the Infrastructure SEPP details development permitted without consent in relation to gas pipelines. Clause 53(1) states:

Development for the purpose of a pipeline may be carried out by any person without consent on any land if the pipeline is subject to a licence under the *Pipelines Act 1967* or a licence or authorisation under the *Gas Supply Act 1996*.

The proposed modification constitutes development for the purpose of a gas pipeline that would be carried out subject to a licence under the *Pipelines Act 1967*. Under clause 53(4) development for the purpose of a gas pipeline includes construction works, emergency works or routine maintenance works.

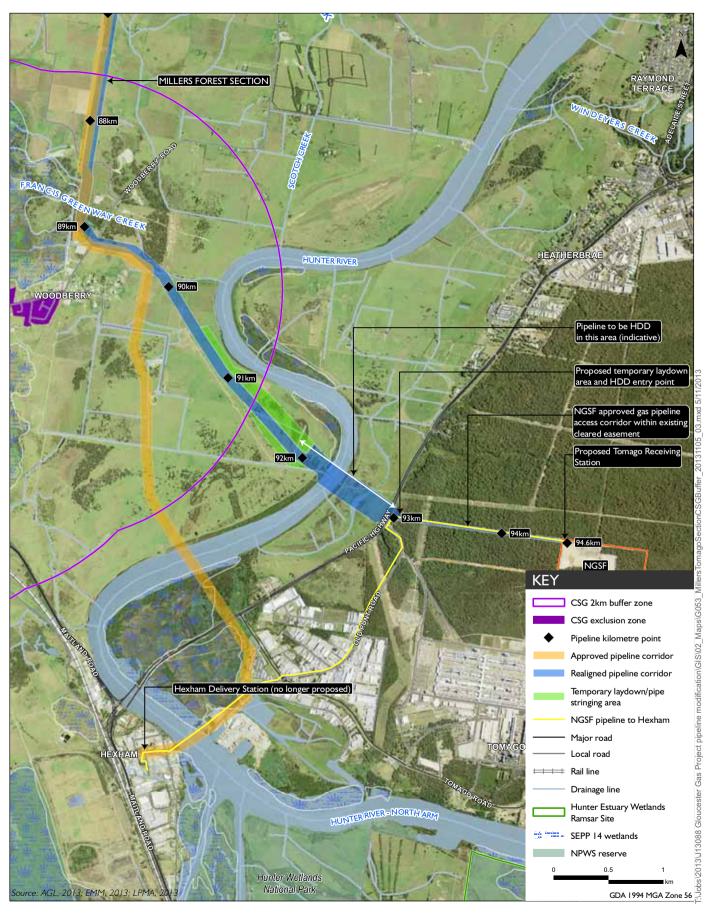
It should be noted, however, that Clause 8 of the Infrastructure SEPP states that, if there is an inconsistency between the Infrastructure and Major Development SEPPs, the Major Development SEPP prevails over the Infrastructure SEPP to the extent of the inconsistency. Therefore, carrying out of development for the purpose of a gas pipeline requires consent. Construction, emergency, and routine works are covered by the existing Part 3A approval.

iv State Environmental Planning Policy No. 14 – Coastal Wetlands

State Environmental Planning Policy No. 14 – Coastal Wetlands (SEPP 14) aims to preserve and protect coastal wetlands. The proposed modification is in the vicinity of SEPP 14 wetlands but will not result in direct impacts which require consent from council under clause 7. Further details on these wetlands are provided in Chapters 6 and 10 and their location relative to the proposed modification is as shown on Figure 4.5.

v State Environmental Planning Policy No.33 – Hazardous and Offensive Development

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development (SEPP 33) applies to development that has the potential to be hazardous and/or offensive and ensures that off-site risks and offences are properly assessed. Any development application for a potentially hazardous or offensive development must be supported by a preliminary hazard analysis (PHA) prepared in accordance with *Applying SEPP 33 – Hazardous and Offensive Development Application Guidelines* (DP&I 2011).





Millers Forest and Tomago sections - Mining SEPP CSG buffer zones

A PHA was prepared for the GGP which found that the development was not potentially hazardous or offensive as it did not pose a significant risk to humans or the biophysical environment subject to recommended mitigation measures. Further, under Condition 3.47 of the Project approval, a Final Hazard Analysis is to be undertaken consistent with DP&I's Hazardous Industry Planning Advisory Paper No. 6, 'Guidelines for Hazard Analysis' of the final project design. An assessment of the risks associated with the proposed modification is provided in Chapter 9 and Appendix F.

vi State Environmental Planning Policy No.44 – Koala Habitat

State Environmental Planning Policy No. 44 – Koala Habitat Protection (SEPP 44) encourages the conservation and management of koala habitats to ensure permanent free-living koala populations will be maintained over their present range. SEPP 44 requires that prior to granting consent to a development on land subject to the policy, council must consider whether the land constitutes 'potential' or 'core' koala habitat. As stated in the AECOM (2009a) EA, whilst the consent authority for the GGP was the then Minister for Planning, it is assumed that the policy is intended to apply to Part 3A projects, and an assessment of impacts to koala habitat and mitigation measures to be implemented was undertaken. Such an assessment was also undertaken for the proposed modification, and is detailed in Chapter 6 and Appendix C.

A comprehensive Koala Plan of Management (Port Stevens Council 2002) has been prepared for the Port Stephens LGA. Compliance with this plan implies compliance with the requirements of SEPP 44. Consideration of the provisions of this Plan of Management is given in Chapter 6 and Appendix C.

vii State Environmental Planning Policy No.55 – Remediation of land

State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55) provides for a statewide planning approach to the remediation of contaminated land. Under clause 7(1) of SEPP 55, prior to granting consent to the carrying out of any development on land a consent authority is required to give consideration as to whether land is contaminated and, if the land is contaminated, whether the land is suitable for the purpose of the development or whether remediation is required.

The proposed modification is mainly on land which is for the purpose of agriculture and grazing and is also on land for the purpose of industrial activities and within an existing cleared utility easement, which may have involved activities with the potential to result in contamination. The materials used in development of a pipeline are not considered sensitive to potential contamination. A search of EPA's Contaminated Land Register in November 2013 identified the following sites in Maitland and Port Stephens LGA's:

- East Maitland Gas Works (some 12 km from the Brandy Hill section);
- Maitland Gas Works (over 13.5 km from the Brandy Hill section); and
- Minmet Operations (25 School Drive over 2 km from the proposed TRS location).

It is not anticipated that remediation of land would be required as part of the proposed modification. Notwithstanding, the Project approval (Condition 7.3(c)) includes a requirement for a Soil and Water Management Plan that includes a strategy for contaminated soil management should any such areas be uncovered during construction.

viii State Environmental Planning Policy No.71 – Coastal Protection

State Environmental Planning Policy No. 71 – Coastal Protection (SEPP 71) aims to ensure that development in coastal areas is suitably appropriate for coastal planning management. Clause 8 of SEPP 71 provides matters to be taken into account by a consent authority when determining an application to carry out development in the coastal zone.

The western end of the Tomago section is within the coastal zone. Assessment of the proposed modification against the Clause 8 matters is given in Table 4.2.

Table 4.2Consideration of relevant SEPP 71, Clause 8 matters

Matter	Comment
--------	---------

(a) the aims of this Policy set out in clause 2,

- to protect and manage the natural, cultural, recreational and economic attributes of the NSW coast, and
- to protect and improve existing public access to and along coastal foreshores to the extent that this is compatible with the natural attributes of the coastal foreshore, and
- to ensure that new opportunities for public access to and along coastal foreshores are identified and realised to the extent that this is compatible with the natural attributes of the coastal foreshore, and
- to protect and preserve Aboriginal cultural heritage, and Aboriginal places, values, customs, beliefs and traditional knowledge, and
- to ensure that the visual amenity of the coast is protected, and
- to protect and preserve beach environments and beach amenity, and
- to protect and preserve native coastal vegetation, and
- to protect and preserve the marine environment of NSW, and
- to protect and preserve rock platforms, and
- to manage the coastal zone in accordance with the principles of ecologically sustainable development (within the meaning of section 6 (2) of the Protection of the Environment Administration Act 1991), and
- to ensure that the type, bulk, scale and size of development is appropriate for the location and protects and improves the natural scenic quality of the surrounding area, and
- to encourage a strategic approach to coastal management.
- (b) existing public access to and along the coastal foreshore for pedestrians or persons with a disability should be retained and, where possible, public access to and along the coastal foreshore for pedestrians or persons with a disability should be improved,
- (c) opportunities to provide new public access to and along the coastal foreshore for pedestrians or persons with a disability,
- (d) the suitability of development given its type, location and design and its relationship with the surrounding area,
- (e) any detrimental impact that development may have on the amenity of the coastal foreshore, including any significant overshadowing of the coastal foreshore and any significant loss of views from a public place to the coastal foreshore,
- (f) the scenic qualities of the NSW coast, and means to protect and improve these qualities,

The proposed modification is consistent with the relevant aims of the Policy.

The proposed modification does not impact existing public access to and along the coastal foreshore.

The proposed modification would not impact any areas of coastal foreshore where new public access could be provided.

That part of the proposed pipeline within the mapped coastal zone area will be buried and so will not conflict with this objective.

The proposed modification would not have any detrimental impact on the amenity of the coastal foreshore.

The proposed modification would not impact the scenic qualities of the coast.

Table 4.2 Consideration of relevant SEPP 71, Clause 8 matters

Matter

Matter	Comment
(g) measures to conserve animals (within the meaning of the TSC Act) and plants (within the meaning of that Act), and their habitats,	The proposed modification would not significantly impact on the conservation of threatened animal or plant species or their habitats (see Chapter 6).
(h) measures to conserve fish (within the meaning of Part 7A of the Fisheries Management Act 1994) and marine vegetation (within the meaning of that Part), and their habitats	The proposed modification would not significantly impact on the conservation of threatened fish species or marine vegetation or their habitats (see Chapter 6).
(i) existing wildlife corridors and the impact of development on these corridors,	The proposed modification would not significantly impact on existing wildlife corridors (see Chapter 6).
(j) the likely impact of coastal processes and coastal hazards on development and any likely impacts of development on coastal processes and coastal hazards,	The proposed modification would not impact on coastal processes or hazards. Sea level rise attributed to climate change is not anticipated to impact on surface infrastructure.
(k) measures to reduce the potential for conflict between land-based and water-based coastal activities,	The proposed modification does not conflict between land-based and water-based coastal activities.
(I) measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals,	The proposed modification would not significantly impact on Aboriginal heritage (see Chapter 7).
(m) likely impacts of development on the water quality of coastal waterbodies,	The proposed modification would not result in a significant impact on water quality of any coastal waterbodies (see Chapter 10).
(n) the conservation and preservation of items of heritage, archaeological or historic significance,	The proposed modification would not significantly impact on Aboriginal or historic heritage (see Chapter 7).
(p) only in cases in which a development application in relation to proposed development is determined:	
(i) the cumulative impacts of the proposed development on the environment, and	The proposed modification would not have significant cumulative impacts on the environment (see Chapters 6 to 10).
(ii) measures to ensure that water and energy usage by the proposed development is efficient.	As stated in the AECOM (2009a) EA AGL requires efficient use of energy and consideration of environmental sustainability in conducting its business.

Comment

ix Williams River Catchment Regional Environmental Plan 1997

The Williams River Catchment Regional Environmental Plan 1997 (Williams River Catchment Plan) applies to land within the Williams River catchment within the LGAs of Port Stephens and Dungog. The proposed realigned pipeline within the Seaham section is within the Williams River Catchment. Clause 6 requires that the aims and objectives of the Williams River Catchment Plan be taken into account when a consent authority determines a development application for land in the Williams River catchment. Consideration of the aims and objectives is given in Table 4.3.

Table 4.3 Consideration of Williams River Catchment Plan aims and objectives

Aims and objectives	Comment
Aims	
To protect and improve the environmental quality of the Williams River catchment through the management and use of the catchment's resources in an ecologically sustainable manner.	The proposed modification does not conflict with this objective. It is considered to achieve this aim as it will not have significant impact on environmental quality (see Chapters 6 to 10).
Objectives	
To promote sustainable use of land, water, vegetation and other natural resources within the Williams River catchment.	The proposed modification does not conflict with this objective.
To promote the protection and improvement of the environmental quality of the catchment.	The environmental quality of the catchment would not be significantly impacted by the proposed modification (see Chapters 6 to 10).
To establish a co-ordinated and consistent approach to the planning and management of the natural and built environment on a catchment-wide basis by linking the environmental planning system and total catchment management policies, programs and activities within the Williams River catchment through an endorsed catchment-wide regional planning strategy.	The proposed modification does not conflict with this objective.
To provide for changes to occur in the use of land in a manner which protects the quality of the catchment's water resources.	The proposed modification does not conflict with this objective. It would not have a significant impact on the quality of the catchment's water resources (see Chapter 10).

4.3.2 Local environmental plans

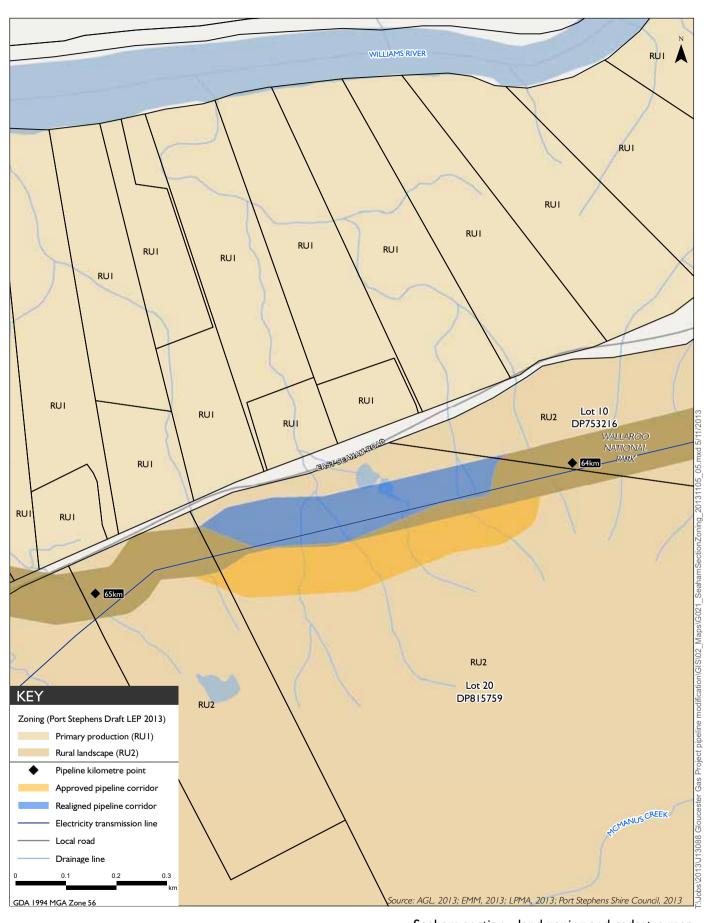
The proposed modification will modify sections of pipeline in the Port Stephens, Newcastle and Maitland LGAs. Since the AECOM (2009a) EA was prepared a number of changes to the local environmental plans (LEPs) for these LGAs have been made. New LEPs for the Newcastle and Maitland LGAs have been gazetted and a draft LEP has been publically exhibited and accepted by Port Stephen Council.

The applicable zonings for the proposed modification are shown in Figures 4.2 to 4.5 and include:

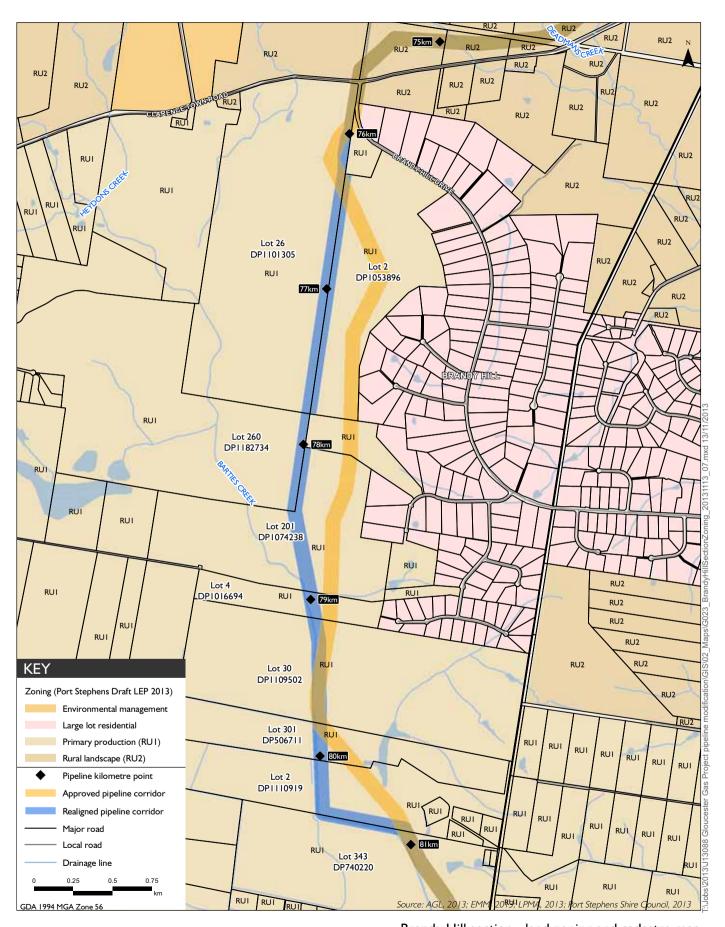
- No. 1(a) Rural Agriculture "A" under the Port Stephens Local Environmental Plan 2000;
- RU1 Primary Production, RU2 Rural Landscape, SP1 Special Activities and IN1 General Industrial under the Draft Port Stephens Local Environmental Plan 2013;
- RU1 Primary Production under the Maitland Local Environmental Plan 2011; and
- W2 Recreational Waterways under the Newcastle Local Environmental Plan 2003.

Development for the purposes of a gas pipeline is permissible with consent within these zones by virtue of clause 7(2) of the Mining SEPP.

As described in Chapter 2, the proposed modification does not involve any surface works within the Newcastle LGA. A small area of the Hunter River, within the assessment corridor for the Tomago section, marginally extends into the Newcastle LGA (Figure 4.5). However, this is at a location proposed to be underbored by HDD, with no surface works. Given this, the Newcastle LGA has not been considered in this EA, however consideration has been given to the relevant LEP provisions of this land.

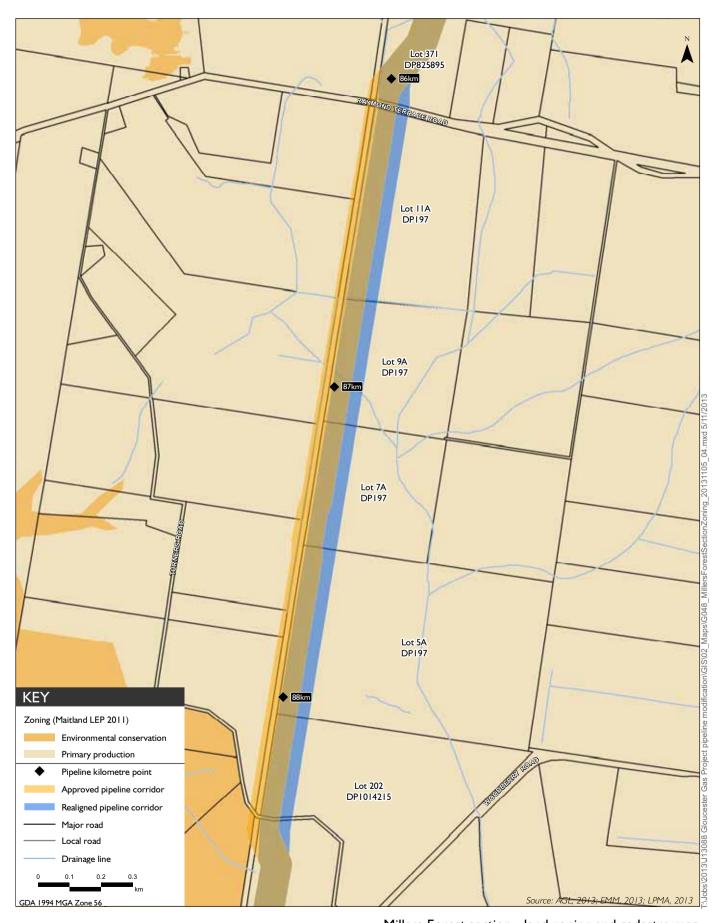






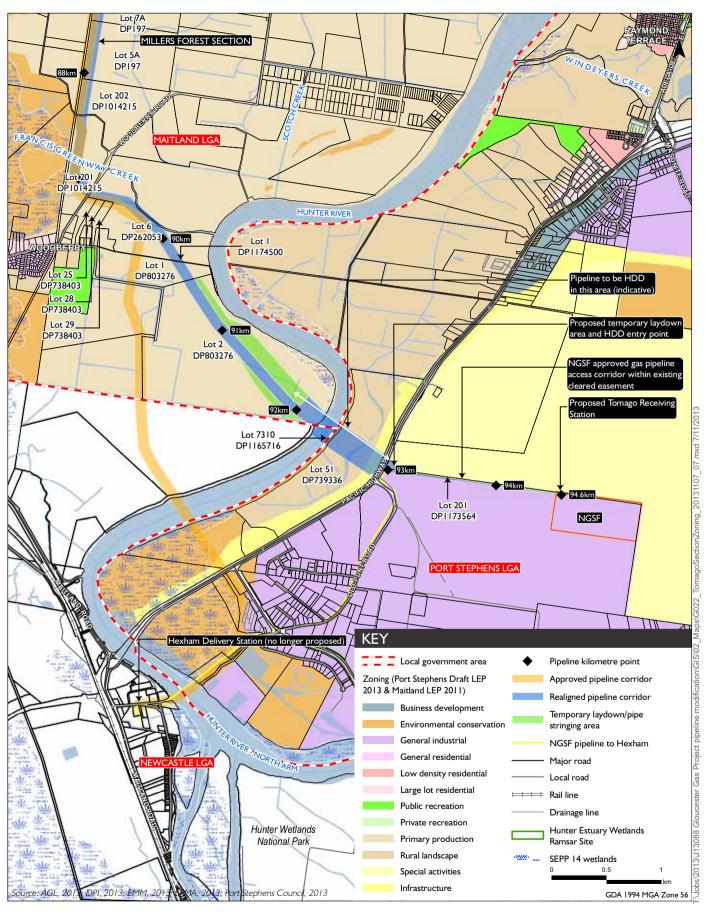


Brandy Hill section - land zoning and cadastre map





Millers Forest section - land zoning and cadastre map





LEP provision	Relevance to proposed modification
Port Stephens Local Environmental Plan 2000	
Zone No. 1(a) Rural Agriculture "A"	Zoning for proposed pipeline corridor realignments within the Seaham, Brandy Hill and Tomago sections.
The objective of the Rural Agriculture "A" Zone is to maintain the rural character of the area and to promote the efficient and sustainable utilisation of rural land and resources by:	
(a) Regulating the development of rural land for purposes other than agriculture by ensuring that development is compatible with rural land uses and does not adversely affect the environment or the amenity of the locality	Refer to Chapter 10. The proposed modification is consistent with the approved GGP, is compatible with the surrounding land uses and will not adversely affect the environment or amenity of the locality.
(b) Ensuring development will not have a detrimental effect on	Refer to Chapter 10.
established agricultural operations or rural activities in the locality	The proposed modification will not have a detrimental effect on agricultural operations.
(c) Preventing the fragmentation of grazing or prime agricultural	Refer to Chapters 2 and 10.
lands, protecting the agricultural potential of rural land not identified for alternative land use, and minimising the cost to the community of: (i) fragmented and isolated development of rural land, and (ii) providing, extending and maintaining public amenities and services	The proposed realigned sections of pipeline corridor will not significantly fragment agricultural land, given that the pipeline will buried and has been aligned with existing util easements and fence-lines where possible.
(d) protecting or conserving (or both protecting and conserving):	Refer to Chapters 6 to 10.
(i) soil stability by controlling development in accordance with land capability, and	The proposed modification generally traverses a similar environment to that of the approved
(ii) trees and other vegetation in environmentally sensitive localities where the conservation of the vegetation is likely to reduce land degradation or biodiversity, and	GGP. The existing requirements of the Project approval provide sufficient management measures to mitigate against potential impacts to the environment and will be updated to
(iii) water resources, water quality and wetland areas, and their catchments and buffer areas, and	include the proposed modification should approval be granted.
(iv) land affected by acid sulfate soils by controlling development of that land likely to affect drainage or lower the watertable or cause soil disturbance, and	эрр. т. ж. о д. а. ж. а. ж
(v) valuable deposits of minerals and extractive materials by restricting development that would compromise the efficient extraction of those deposits	
(e) reducing the incidence of loss of life and damage to property and	Refer to Chapter 10.
the environment in localities subject to flooding and to enable uses and developments consistent with floodplain management practices.	The proposed modification has no surface infrastructure in flood prone land, other than marker posts. The pipeline will be buried in these areas. Construction management measures will be implemented to protect against potential flooding impacts.
	The proposed modification is consistent with the objectives of the zone.

LEP provision

Zone No. 4(a) —Industrial General "A" Zone

The objectives of the Industrial General "A" Zone are to:

- (a) enable the development of a wide range of industrial, service and storage activities and a limited range of business and retail activities, and
- (b) allow industrial development only after comprehensive hazard analysis and risk assessment provide adequate safeguards designed to protect the surrounding environment and ecological balance, and
- (c) regulate industries in proximity to urban localities and to ensure that adequate buffers are provided in the vicinity of adjacent zones, so that activities near the boundary of an adjacent zone will not have a significant detrimental effect on the amenity of that zone, and
- (d) enable the most efficient and effective industrial development of waterfront industrial land by encouraging associated waterfront land uses sympathetic to the environment and ecology of the waterfront lands, and
- (e) allow commercial, retail, residential, or other development only where it is associated with, ancillary to, or supportive of, industrial development, and
- (f) limit development for the purpose of bulky goods salesrooms or showrooms, and
- (g) encourage a high standard of design and amenity in industrial areas.

Clause 37 Objectives for development on flood prone land

The objectives for development on flood prone land are:

- (a) to minimise risk to human life and damage to property caused by flooding and inundation through controlling development, and
- (b) to ensure that the nature and extent of the flooding and inundation hazard are considered prior to development taking place, and
- (c) to provide flexibility in controlling development in flood prone localities so that the new information or approaches to hazard management can be employed where appropriate.

Clause 38 Development on flood prone land

Before granting consent to development on flood prone land the consent authority must consider the following:

Relevance to proposed modification

Zoning for proposed pipeline corridor realignment within the Tomago section

Refer to Chapters 6 to 10.

The proposed modification includes a hazard and risk analysis (refer to Chapter 9 and Appendix F). The hazard and risk assessment concluded that the proposed modification does not result in additional hazards to surrounding receptors or the environment.

The proposed modification is consistent with the objectives of the zone.

Parts of the proposed pipeline corridor realignments within the Brandy Hill and Tomago sections are mapped as flood prone land (LPMA 2013).

Refer to Chapter 10.

The proposed modification has no surface infrastructure in flood prone land, other than marker posts. The pipeline will be buried in these areas. Construction management measures will be implemented to protect against potential flooding impacts.

The proposed modification is consistent with this clause of the LEP.

The proposed pipeline corridor realignments within the Brandy Hill and Tomago sections are mapped as flood prone land (LPMA 2013).

LEP provision

(a) the extent and nature of the flooding or inundation hazard affecting the land,

- (b) whether or not the proposed development would increase the risk or severity of flooding or inundation affecting other land or buildings, works or other land uses in the vicinity,
- (c) whether the risk of flooding or inundation affecting the proposed development could reasonably be mitigated and whether conditions should be imposed on any consent to further the objectives of this plan,
- (d) the social impact of flooding on occupants, including the ability of emergency services to access, rescue and support residents of flood prone areas,
- (e) the provisions of any floodplain management plan or development control plan adopted by the Council.

Clause 51A Development on land identified on Acid Sulfate Soils Planning Map

Consent authority must not grant consent works on ASS land unless it has considered:

- (a) the adequacy of an Acid Sulfate Soils Management Plan prepared for the proposed development in accordance with the Acid Sulfate Soils Manual, and
- (b) the likelihood of the proposed development resulting in the discharge of acid water.

Relevance to proposed modification

Refer to Chapter 10 and response above. The proposed modification is consistent with the relevant provisions of this clause.

The proposed modified pipeline corridor alignment within the Brandy Hill and Tomago sections is mapped as ASS.

The proposed modification is consistent with this clause of the LEP.

Refer to Chapter 10.

The proposed modification traverses land with high probability of ASS occurrence. A draft ASSMP has been prepared in accordance with relevant standards and guidelines as part of the GGP approval process. This draft ASSMP was a requirement of the determination of the GGP by the PAC. This draft ASSMP will be updated to incorporate the proposed modification should approval be granted.

The proposed modification is consistent with this clause of the LEP.

Draft Port Stephens Local Environmental Plan 2013

RU1 Primary Production

Zone objectives

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.

The proposed pipeline corridor realignment within the Brandy Hill section.

The modified pipeline corridor alignment is within predominantly cleared land adjacent to an artificial drainage channel and fence-line. The pipeline will be buried minimising conflict between land uses and will not fragment existing land uses or resources.

The proposed modification is consistent with the objectives of the zone.

LEP provision

RU2 Rural Landscape

Zone objectives

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To maintain the rural landscape character of the land.
- To provide for a range of compatible land uses, including extensive agriculture.

IN1 General Industrial

Zone objectives

- To provide a wide range of industrial and warehouse land uses.
- To encourage employment opportunities.
- To minimise any adverse effect of industry on other land uses.

SP1 Special Activities

Zone objectives

- To provide for special land uses that are not provided for in other zones
- To provide for sites with special natural characteristics that are not provided for in other zones.
- To facilitate development that is in keeping with the special characteristics of the site or its existing or intended special use, and that minimises any adverse impacts on surrounding land.
- To ensure the protection of water catchment areas to safeguard the quality and quantity of groundwater and surface water.
- To facilitate the provision of infrastructure provided by Hunter Water Corporation.

Clause 7.1 Acid Sulfate Soils*

- (3) Development consent must not be granted under this clause for the carrying out of works unless an acid sulfate soils management plan has been prepared for the proposed works in accordance with the Acid Sulfate Soils Manual and has been provided to the consent authority.
- (6) Despite subclause (2), development consent is not required under this clause to carry out any works if:
 - (a) the works involve the disturbance of less than 1 tonne of soil, such as occurs in carrying out agriculture, the construction or maintenance of drains, extractive industries, dredging, the construction of artificial water bodies (including canals, dams and detention basins) or foundations or flood mitigation works, or
 - (b) the works are not likely to lower the watertable.

Relevance to proposed modification

The proposed pipeline corridor realignment within the Tomago and Seaham sections

The proposed pipeline will be buried and the corridor rehabilitated consistent with the existing land use after construction. It will not alter the rural character of the land or significantly impact agricultural activities.

The proposed modification is consistent with the objectives of the zone.

The proposed pipeline corridor realignment within the Tomago section.

The modified pipeline corridor alignment will use an existing cleared utility easement to lay the pipe and construct the TRS which will connect the pipeline to the NGSF, an adjacent industrial facility.

The proposed modification is consistent with the objectives of the zone.

The proposed pipeline corridor realignment within the Tomago section, however the land will not be directly intercepted as it will be underbored using HDD.

N/A

Parts of the proposed pipeline corridor alignment comprise ASS.

Refer to Chapter 10.

An ASSMP is not required by virtue of subclause (6) of the LEP as the works are not likely to lower the watertable. However, an ASSMP has been prepared for the GGP. It has been prepared in accordance with the relevant standards and guidelines.

The proposed modification is consistent with this clause of the LEP.

LEP provision

Clause 7.2 Earthworks*

- (3) Before granting development consent for earthworks, the consent authority must consider the following matters:
 - (a) likely disruption of, or any detrimental effect on, existing drainage patterns and soil stability in the locality,
 - (b) effect of the proposed development on the likely future use or redevelopment of the land,
 - (c) quality of the fill or the soil to be excavated, or both,
 - (d) effect of the proposed development on the existing and likely amenity of adjoining properties,
 - (e) source of any fill material and the destination of any excavated material,
 - (f) likelihood of disturbing relics,
 - (g) proximity to and potential for adverse impacts on any watercourse, drinking water catchment or environmentally sensitive area.
 - (h) presence of noxious weeds,
 - (i) impact on neighbouring vegetation.

Clause 7.3 Flood planning*

- (3) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that the development:
 - (a) is compatible with the flood hazard of the land, and
 - (b) is not likely to significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and
 - (c) incorporates appropriate measures to manage risk to life from flood, and
 - (d) is not likely to significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses, and
 - (e) is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding

Clause 7.8 Drinking Water catchment

Relevance to proposed modification

Earthworks will be required for construction. Refer to Chapters 6, 7 and 10.

The proposed modification will be constructed using the same methods and techniques as those currently approved.

In addition, the Project approval comprises an existing framework requiring the proponent to prepare and submit a CEMP prior to construction to the Director-General. The CEMP is required to consider matters such as those listed in clause 7.2 and implement prescribed mitigation measures.

The proposed modification is consistent with this clause of the LEP.

Parts of the proposed pipeline corridor realignment are within a flood planning area.

Refer to Chapter 10 and response above.

The proposed modification is consistent with this clause of the LEP.

The proposed pipeline corridor realignment within the Seaham section and part of the Tomago section is mapped as being within the drinking water catchment.

LEP provision

- (3) Consent will not be granted to development on any land within the Drinking Water Catchment unless the consent authority is satisfied that the development is sited, designed and managed to:
 - (a) protect and, where possible, improve water quality that is within the drinking water catchment, and
 - (b) not adversely impact on the natural systems that are essential for maintaining and improving water quality, and
 - (c) minimise the impact of vegetation clearing and soil disturbance, which could detrimentally alter the quality or quantity of the natural surface or sub-surface water movement, and
 - (d) encourage the restoration and maintenance of areas of disturbed native vegetation, and
 - (e) minimise the potential impacts on water quality and flows from the proposed development, and
 - (f) maintain a sufficient distance between the proposed development and waterways that feed into the water supply catchment, and
 - (g) not impose an unacceptable risk to the drinking water quality as a result of with the on-site use, storage and disposal of any chemicals on the site, and
 - (h) not impose an unacceptable risk to the drinking water quality as a result of the treatment, storage and disposal of wastewater and solid waste generated or used on the site.

Clause 7.9 Wetland

- (3) When assessing a development application, the consent authority must consider potential adverse impacts from the proposed development on:
 - (a) the growth and survival of native flora and fauna,
 - (b) the condition and significance of the native flora on the land and whether it should be substantially retained,
 - (c) the provision and quality of habitats for indigenous and migratory species,
 - (d) the surface and groundwater characteristics of the site, including water quality, natural water flows and salinity, and
 - (e) any wetland in the vicinity of the proposed development, and any proposed measures to minimise or mitigate those impacts.

Relevance to proposed modification

The proposed modification is consistent with relevant aspects of this clause. A suite of environmental safeguards are proposed to avoid and minimise adverse environmental impacts, including native vegetation clearing and adverse water quality impacts.

The proposed pipeline corridor realignment within the Brandy Hill is adjacent to a wetland area.

Refer to Chapters 6 and 10.

The proposed modification will be constructed using the same methods and techniques as those currently approved.

The 30 m ROW will be selected considering environmental constraints such as wetlands, threatened species, topographical constraints such as soils, and water bodies.

In addition, the Project approval comprises an existing framework requiring the proponent to prepare and submit a CEMP prior to construction to the Director-General. The CEMP is required to consider matters such as those listed in clause 7.9 and implement prescribed mitigation measures.

The proposed modification is consistent with this clause of the LEP.

LEP provision	Relevance to proposed modification
Clause 7.10 Williams River catchment	The proposed pipeline corridor realignment within the Seaham section mapped as being within the Williams River catchment.
Development consent must not be granted to development on land which this clause applies unless the consent authority has considered:	The approved pipeline corridor alignment is also within the Williams River catchment. The
(a) whether the development:	proposed modification will be constructed
(i) promotes the sustainable use of land, water, vegetation and other natural resources within the Williams River Catchment,	using the same methods and techniques as those currently approved.
(ii) promotes the protection and improvement of the environmental quality of the catchment,	Consideration of the Williams River Catchment Regional Environmental Plan 1997 was given in Section 4.3.1.
(iii) will have any significant adverse impacts on water quality of the Williams River Catchment, and	The proposed modification is consistent with this clause of the LEP.
(b) the Williams River Catchment Regional Planning Strategy.	
Maitland Local Environmental Plan 2011	
RU1 Primary Production	Millers Forest section and part of Tomago section.
Zone objectives	Same as Draft Port Stephens Local Environmental Plan 2013.
Clause 7.1 Acid Sulfate Soils*	Part of the proposed pipeline corridor alignment within the Millers Forest and Tomago sections are mapped as ASS.
	See previous response on ASS.
Clause 7.2 Earthworks*	Earthworks will be required for construction.
	See previous response on earthworks.
Clause 7.3 Flood planning*	The proposed pipeline corridor realignment within the Tomago and Millers Forest sections are within a flood planning area.
	See previous response on flood planning.
Clause 7.4 Riparian land and watercourses	Parts of the proposed pipeline corridor realignment in the Tomago and Millers Forest sections are mapped as watercourse land.
3) Before determining a development application to carry out	Refer to Chapters 6 and 10.
development on land to which this clause applies, the consent authority must consider whether or not the development:	The proposed pipeline will cross watercourses using the same construction methods and
(a) is likely to have any adverse impact on the following:	techniques as those currently approved. Chapter 2 describes methods to be used for
(i) the water quality and flows within the watercourse,	watercourse crossings.
(ii) aquatic and riparian species, habitats and ecosystems of the watercourse,	In addition, the Project approval comprises an
(iii) the stability of the bed, shore and banks of the watercourse,	existing framework requiring the proponent to
(iv) the free passage of fish and other aquatic organisms within or along the watercourse,	prepare and submit a CEMP prior to construction to the Director-General. The CEMP is required to include a watercourse
(v) any future rehabilitation of the watercourse and its riparian areas, and	crossing strategy which considers matters such as those listed in clause 7.4 and implement
(b) is likely to increase water extraction from the watercourse.	prescribed mitigation measures. The proposed modification is consistent with this clause of the LEP.

LEP provision	Relevance to proposed modification
(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:	Refer to Chapters 6 and 10 and the response above.
(a) the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or	
(b) if that impact cannot be reasonably avoided by adopting feasible alternatives—the development is designed, sited and will be managed to minimise that impact, or	
(c) if that impact cannot be minimised—the development will be managed to mitigate that impact.	
Newcastle Local Environmental Plan 2003	
W2 Recreational Waterways	The proposed pipeline corridor realignment within the Tomago section underbores the Hunter River.
Zone Objectives	
To protect the ecological, scenic and recreation values of	Refer to Chapter 6.
recreational waterways.	The proposed modification results in a single
 To allow for water-based recreation and related uses. To provide for sustainable fishing industries and recreational fishing. 	crossing of the Hunter using HDD, whereas the approved pipeline corridor alignment crosses the Hunter River twice. The pipeline will be constructed using the same methods and techniques as those currently approved.
	The pipeline will be buried and not affect ecological, scenic or recreation values of the recreational waterway or restrict water-based recreation and related uses.
	The proposed modification would have no impact on sustainable fishing industries and recreational fishing.
	The proposed modification is consistent with this clause of the LEP.
Clause 6.1 Acid Sulfate Soils*	Part of the proposed pipeline corridor realignment within the Tomago section is mapped as Class 1 ASS.
	See previous response on ASS.

Notes: *Standard Instrument provision.

4.4 Environment Protection and Biodiversity Conservation Act 1999

4.4.1 Overview

The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities, heritage places and water resources which are defined as MNES. MNES, as defined under the EPBC Act, include:

- world heritage properties;
- places listed on the National Heritage Register;

- Ramsar wetlands of international significance;
- threatened flora and fauna species and ecological communities;
- migratory species;
- Commonwealth marine areas;
- nuclear actions (including uranium mining); and
- actions of development for coal seam gas or large coal mining developments on water resources.

Under the EPBC Act, actions that may have a significant impact on a MNES are deemed to be 'controlled actions' and can only proceed with the approval of the Commonwealth Minister for the Environment. An action that may potentially have an impact on a MNES is to be referred to the DoE for determination as to whether or not it is a controlled action.

4.4.2 Controlled action – EPBC 2008/4432

A referral under the EPBC Act was lodged for the GGP which was deemed to be a 'controlled action' as it was considered likely to have significant impact on:

- wetlands of international significance; and
- listed threatened species and communities.

An accredited assessment process was undertaken for the GGP. A Commonwealth approval with conditions (EPBC 2008/4432) was granted by the Minister for the Environment on 11 February 2013.

4.4.3 Proposed modification

On 22 June 2013, amendments were made to the EPBC Act which added 'water resources' as a MNES, in relation to coal seam gas and large coal mining developments. The definition for coal seam gas and large scale mining developments focuses on the water extraction process, rather than associated infrastructure. Associated infrastructure that does not form part of the water extraction process is not included in the definition of a coal seam gas or large coal mine development. Pipelines have been specifically listed as a type of infrastructure that is excluded.

The proposed modification itself does not involve extractive activities and therefore is considered to be exempt from this MNES, and would not require referral. Notwithstanding, a self-assessment was undertaken using the draft significant impact guidelines and determined that the proposed modification will not have a significant impact on the water resources of the local area and does not need to be referred.

The proposed modification is not considered likely to have a significant impact on any MNES and, therefore, a referral to DoE will not be required. An impact assessment of the proposed modification on MNES is detailed in Chapters 6 and 10 and Appendix C.