



Australian Government

Department of the Environment, Water, Heritage and the Arts

Referral of Proposed Action

Alkimos LSP

Lot 1004, Alkimos WA

March 2011



Project title:

Alkimos LSP (Residential Development)

Lot 1004, Alkimos WA

1 Summary of proposed action

1.1 Short description

The proposed action forms part of a residential development at Alkimos, Western Australia. The action is situated 40km north-west of Perth CBD (**Figure 1 – Attachment 1**) and involves works pertaining to urban housing, coastal village, schools, major roads and transport routes. The proposed action consequently involves the clearing of potential habitat for both the Carnaby's Black-Cockatoo and the Graceful Sun Moth, as well as conservation and mitigation measures for the protection and creation of habitat for both species, through dedicated areas for conservation in Regional Open Space (ROS) and Public Open Space (POS) and suitable habitat plantings throughout the development in landscaping and street scapes.

Alkimos LSP - Lot 1004 (herein referred to as 'The site') is situated within the south-west corner of the Alkimos-Eglinton District Structure Plan (AEDSP), which was subjected to an MRS amendment (1029/33) to assess environmental values at the site and was subsequently approved by the Western Australian Minister for the Environment on 24 April 2006 (Statement 722). The area subject to this referral (ie. Lot 1004 within Alkimos LSP) is zoned urban development in the Metropolitan Region Scheme (MRS).

The Alkimos LSP provides a further detailed level of planning for the 224 ha part lot 1004 (a sub-site of greater Alkimos-Eglinton DSP), see **Figure 4**.

1.2 Latitude and longitude

location point	Latitude			Longitude		
	degrees	minutes	seconds	degrees	minutes	seconds
1 - NE	31	36	40	115	41	16
2 - E	31	37	24	115	41	23
3 - SE	31	37	52	115	41	6
4 - SW	31	37	53	115	40	8
5 - W	31	37	13	115	39	47
6 - NW	31	36	35	115	39	44

Note: a section (Lot 101) of the Alkimos LSP is being referred separately due to multiple land ownership

1.3 **Locality**

Alkimos is located 40km north-west of Perth, WA. The site is intersected in the east by Marmion Avenue. To the north it adjoins the Water Corporation's - Waste Water Treatment Plant (WWTP). Coastal foredunes and ultimately the Indian Ocean are located to the west.

1.4 **Size of the development footprint or work area (hectares)** 224 ha

1.5 **Street address of the site** 80L Romeo Road and 2611 Marmion Avenue, Alkimos 6038

1.6 **Lot description**

Lot: 1004 in DP: 61237

1.7 **Local Government Area and Council contact (if known)**

The proposed development site is located within the City of Wanneroo

1.8 **Timeframe**

Works are scheduled to commence in 2011. Construction of the residential development and associated infrastructure within the site will occur over a number of years and will be staged in response to market conditions and availability of services. The date for commencement of construction of the precincts proposed in this referral is pending statutory approvals.

1.9	Alternatives to proposed action	<input checked="" type="checkbox"/>	No
		<input type="checkbox"/>	Yes, you must also complete section 2.2
1.10	Alternative time frames	<input checked="" type="checkbox"/>	No
		<input type="checkbox"/>	Yes, you must also complete Section 2.3. For each alternative, location, time frame, or activity identified, you must also complete details in Sections 1.2-1.9, 2.4-2.7 and 3.3 (where relevant).
1.11	State assessment	<input type="checkbox"/>	No
		<input checked="" type="checkbox"/>	Yes, you must also complete Section 2.4
1.12	Component of larger action	<input checked="" type="checkbox"/>	No
		<input type="checkbox"/>	Yes, you must also complete Section 2.6
1.13	Related actions/proposals	<input checked="" type="checkbox"/>	No
		<input type="checkbox"/>	
1.14	Australian Government funding	<input checked="" type="checkbox"/>	No
		<input type="checkbox"/>	Yes, provide details:

1.15 **Great Barrier Reef
Marine Park**

No

Yes, you must also complete Section 3.1 (h), 3.2 (e)

2 Detailed description of proposed action

2.1 Description of proposed action

The proposal site (Lot 1004) is a 224 ha parcel of land of which Lend Lease (under this referral) propose to develop for residential/community purposes. In addition to the proposed residential land uses, a 33.5 ha area of coastal vegetation dedicated to conservation in Regional Open Space is proposed and a further 6 ha protected in conservation Public Open Space. See **Figure 4**.

Lend Lease has been appointed as the development partner with LandCorp (the landholder) for the South Alkimos (Lot 1004) project. Lend Lease is also responsible for the project management of the project.

The site sits within a larger parcel (known as the Alkimos-Eglinton district - 2660 ha) of land 40km north-west of Perth, which has recently undergone an MRS amendment (1029/33). Consequently the Alkimos Eglinton District Structure Plan (AEDSP) was prepared, to provide further definition for future land use. Further, the Alkimos LSP has been developed to guide the subdivision and development of the project site.

The site has previously been used for agricultural grazing. Accordingly large areas of the site are in a degraded condition, with other consolidated areas of good quality vegetation dispersed through a coastal dunal system. The Alkimos LSP site is predominately proposed as a residential area, which is in accordance with the current MRS zoning. It will include a major regional town centre, a coastal village, regional beach, substantial public open space and a range of social and community infrastructure.

Development of the initial 224 hectare stage at Alkimos is expected to start in 2011 and will include approximately 2,500 homes with the first residential land to be released for sale in the same year.

It is planned that the site will comprise the following urban land uses:

- Residential lots
- Coastal village/node
- Movement/transport network
- Schools
- Public open space
- Shopping precinct

To achieve the proposed structure plan, development at the site is expected to constitute the following actions:

- clearing of vegetation in approved footprint prior to development
- earthworks for creating appropriate levels and lot areas
- installation of services like water, power, electricity, gas
- roadworks for establishment of transport networks
- landscape works including streetscapes, planting of trees, gardens and creation of active open space
- installation of fencing, and other conservation management measures for retained vegetation on site
- selling of lots and subsequent development of houses and commercial buildings

2.2 Alternative locations, time frames or activities that form part of the referred action

There are no alternative locations, time frames or activities that form part of the referred action.

2.3 Context, planning framework and state/local government requirements

The management of potential environmental impacts and implications of urban development in the Alkimos-Eglinton area has been considered by WA State environmental agencies and planning authorities through the evaluation of planning reports addressing these matters over several tiers of planning. The Alkimos-Eglinton site is situated within the jurisdiction of the City of Wanneroo, an important growth area earmarked for urban development within Perth's northern suburbs (**Figure 1**). Development in the North West coastal area of Perth has been proposed since the 1970s and commenced planning in the early 1990s. The Alkimos area has accordingly undergone several levels of planning and assessment to date, which have involved consideration of the impacts of urban development and required mitigation including establishment of conservation areas.

The 1987 report Planning for the Future of the Perth Metropolitan Region identified among other areas, the "North-West Corridor" area for urban development. Consequently, in 1992 the North-West Corridor Structure Plan (NWCSP) established in more detail the land use planning for the corridor – identifying land for urban growth primarily along the coast and protecting land for Parks and Recreation and other non-urban uses primarily inland – from Hepburn Avenue in the south to Yanchep/Two Rocks in the north (see **Figure 2**). The Environmental Protection Agency (EPA) provided advice on the NWCSP that would form the framework for more detailed consideration at following stages. This included an indication of the likely requirements for retention of land for conservation to ensure its objectives for the protection of native flora and fauna were met in subsequent re-zonings and district structure plans that would address planning at a finer scale.

Following endorsement of the NWCSP, amendments to the Metropolitan Region Scheme (MRS)¹ for component districts within the North-West Corridor were initiated to rezone the land such that it allowed the proposed uses indicated on the NWCSP. MRS Amendment 1029/33 for the Alkimos Eglinton District was one such amendment. The MRS amendment provided for the rezoning of land to allow uses consistent with the NWCSP, including to both urban land and parks and recreation land (regional open space). This amendment was formally assessed by the EPA in 2005 and established the infrastructure framework for an area of some 2,660 ha with a coastline of approximately 7.5 kilometres. The district was noted as having the potential to yield around 17,000 dwellings sufficient to accommodate around 50,000 people (WAPC 2003). **Figure 3** is an extract of the MRS Plan in the Alkimos Eglinton district pursuant to the gazettal of Amendment 1029/33 on 2006.

The next layer of planning, the Alkimos Eglinton District Structure Plan (AEDSP) further defined the planning for the future development of Alkimos and Eglinton, based upon the broad zonings and reservations of the amended MRS and providing further detail in terms of movement patterns and activity centres. The AEDSP (**Figure 4**) was developed by the Department for Planning and Infrastructure and the City of Wanneroo. It established:

- a public purposes site for a Waste Water Treatment Plant (WWTP), Groundwater Treatment Plant (GWTP) and buffers;
- coastal foreshores;
- parks and recreation links;
- regional road alignments (Marmion Avenue and Connolly Drive) and Mitchell Freeway alignment; and
- the northern suburbs passenger railway alignment.

The Environmental Protection Authority (EPA), in assessing the acceptability of potential environmental impacts of the changes in land use proposed in MRS amendment 1029/33 and the AEDSP, has also considered and had specific requirements for conservation of land in regional open space. The reservation of land for regional open space has in part been to address mitigation of impacts of clearing of land for urban use. In recommending approval of the MRS amendment, the EPA has had to be satisfied its objectives for the protection of flora and fauna can be met following implementation of the land uses proposed in the amendment.

¹ The MRS is a large town planning scheme for land use in the Perth metropolitan area. The MRS defines the future use of land, dividing it into broad zones and reservations. It requires local government local planning schemes to provide detailed plans for their part of the region. These schemes must be consistent with the MRS.

One of the factors taken into consideration by the EPA for the MRS amendment was the protection of Carnaby's Black Cockatoo foraging habitat. The assessment process resulted in LandCorp (and to a lesser extent neighbouring landholders) increasing the area of vegetation protected in the Regional Open Space (ROS) from 150 ha to over 500 ha throughout the AEDSP. Approximately 78% of this district ROS is situated within LandCorp's land holdings. This regionally significant vegetation is protected in two east west ecological corridors within the AEDSP, with components of north south coastal vegetation also protected. One of the east-west ecological corridors within the AEDSP is situated directly to the north abutting the subject site and contains large areas of important fauna habitat. Mechanisms are in place to ensure that landscapes/vegetation proposed to be retained within ROS is secure and protected in perpetuity and appropriately managed. The Minister for the Environment Statement 722 requires the submission of suitably prepared Environmental Management Plans (to the satisfaction of WAPC) for those ROS areas dedicated to conservation. Following completion of the Alkimos Local Structure Plan (LSP) process and project site infrastructure, lands designated as ROS will be acquired by WAPC for future management of conservation values. The intention is for land to be placed under the tenure of DEC as part of the conservation estate however in the interim, the land would likely be managed by DEC under the s16 provisions of the *Conservation and Land Management Act 1984* (WA), which provide for DEC to manage WAPC land for purpose of conservation.

Subsequent to MRS Amendment 1029/33 and the AEDSP, the Alkimos LSP for Lot 1004 (**Figure 5**) has been prepared to guide future subdivisions and development of land in Alkimos at a finer scale. The LSP has been prepared in the context and requirements set out by the AEDSP, but further addresses urban design and open space requirements at the local level. This includes delineation of public open space (POS) while recognising and ensuring the provision of ROS identified in the AEDSP. The retention of potential habitat for Carnaby's Black Cockatoo and Graceful Sun Moth has been considered in this local planning stage with additional habitat proposed in POS for conservation protection, in addition to that conserved in ROS (see **Section 4** for more detail).

2.4 Environmental impact assessments under Commonwealth, state or territory legislation

Approval for amendment 1029/33 to the MRS was approved in April 2006 (Gazetted June 2006).

Several documents have been prepared in relation to the site and surrounds involving detailed background studies covering environmental impact. These studies and reports have been used in the preparation of this referral. They are:

- *Environmental assessment of the Alkimos-Eglinton District Structure Plan* – RPS Bowman Bishaw Gorham, 2006
- *Metropolitan Region Scheme Amendment 1029/33: Alkimos-Eglinton Flora, Fauna and Vegetation Baseline Information* – ATA Environmental, 2005
- *Alkimos-Eglinton Environmental Review* – ATA Environmental, 2003
- *Alkimos-Eglinton Environmental Report* – Alan Tingay and Associates, 1997
- *A Report on the Flora and Vegetation of the Alkimos Area and Conservation Issues Affecting It* – Trudgen and Keighery, 1990 (unpublished for Lend Lease)
- *Local Environmental Impact Assessment & Management Strategy – Part Lot 1004 Alkimos* – RPS Environment and Planning Pty Ltd 2010
- *Graceful Sun Moth Survey – Alkimos LSP Lot 1004*: Eco Logical Australia 2010

2.5 Consultation with Indigenous stakeholders

A survey of Aboriginal Heritage was carried out for the *Alkimos-Eglinton DSP*. The survey identified only one site of significance which is known as Karli Spring to the south east of the project area. No sites of indigenous heritage have been identified on Lot 1004.

2.6 A staged development or component of a larger project

Not applicable.

3 Description of environment & likely impacts

3.1 Matters of national environmental significance

3.1 (a) World Heritage Properties

Description

No World Heritage Properties are known to occur within the vicinity of the Alkimos LSP site

Nature and extent of likely impact

N/A

3.1 (b) National Heritage Places

Description

No National Heritage Properties are known to occur within the vicinity of the Alkimos LSP site

Nature and extent of likely impact

N/A

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)

Description

Lot 1004 within Alkimos LSP is situated within the same catchment as one (1) Ramsar Wetland of International Importance – Forrestdale & Thomson lakes.

Nature and extent of likely impact

It is considered that the proposed development will have nil impact on the Forrestdale & Thomson lakes, given the distance (of ~ 60km) between the two sites.

3.1 (d) Listed threatened species and ecological communities

Description

A total of eighteen (18) listed threatened species and one (1) ecological community were identified from the search undertaken using the DEWHA online EPBC Act Protected Matters Search Tool (PMST) (**Attachment 2**). A full listing of these species is provided below.

Nature and extent of likely impact

An assessment of the impacts on listed species and ecological communities has been undertaken in the development of this referral. Information used to inform this assessment has included:

- flora and fauna surveys and analysis,
- DEWHA and DEC online databases
- Regional and district vegetation mapping,
- review of literature, data audit and consultation.

Using this information the presence or absence of suitable habitat and the likelihood of occurrence of listed species and communities has been determined and is presented in the table below. Five terms for the likelihood of occurrence of species and communities are used and are defined as follows:

“Known” = the species was or has been observed on the site.

“Likely” = a medium to high probability that a species uses the site. The species has been recorded within the local area and habitat within the site is considered to highly suitable.

“Potential” = potentially suitable habitat for the species occurs on the site, and the site is located within the known geographic range of the species, but there is insufficient information to categorise the species as likely to occur, or unlikely to occur. This may be due to insufficient detail known about the species ecology and/or details about habitat characteristics of the site and surrounding area.

“Unlikely” = a very low to low probability that a species uses the site. The species may or may not occur locally or regionally, however based on the known habitat requirements of the species, and habitat available within the site, the site is considered unlikely to be suitable or marginal at best.

“No” = habitat on site and in the vicinity is highly unsuitable for the species. Based on the known habitat requirements of the species, the site lacks the required habitat.

An analysis of the likely level of impact from the proposed project on species and communities with a likelihood of occurrence of “likely” or “known” (highlighted in blue) is also provided.

Birds

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
<i>Anous tenuirostris melanops</i>	Australian Lesser Noddy	Vulnerable	Unlikely
<i>Calyptorhynchus banksii naso</i>	Forest Red-tailed Black-Cockatoo	Vulnerable	Unlikely
<i>Calyptorhynchus latirostris</i>	Carnaby's Black-Cockatoo, Short-billed Black-Cockatoo	Endangered	Known
<i>Calyptorhynchus baudinii</i>	Baudin's Black-Cockatoo, Long-billed Black-Cockatoo	Vulnerable	Unlikely

Carnaby's Black-Cockatoo is endemic to the south-west of Western Australia. The species feeds on seeds, nuts and flowers of a variety of native species including *Banksia*, *Dryandra*, *Hakea*, *Grevillea*, *Allocasuarina*, *Eucalyptus* and *Corymbia calophylla*. Carnaby's Black-Cockatoos have also been recorded feeding extensively on seeds from the cones of exotic pines (*Pinus* spp.) (Shah 2006). Pine plantations in the coastal zone are now considered important feeding areas in the non-breeding season (Cale 2003).

The species is a post-breeding nomad, tending to move west with its young after breeding (late spring to mid-winter) to coastal areas, particularly the Swan Coastal Plain. A smaller number of birds remain resident on the Swan Coastal Plain all year and have been recorded breeding in a number of areas including Gingin, Yanchep, Mandurah, and Bunbury.

Like most cockatoo species, Carnaby's Black-Cockatoo is gregarious and is usually seen in small groups and will occasionally congregate in large flocks comprised of hundreds or, exceptionally, thousands of birds. During the breeding season, adults nest as solitary pairs.

Carnaby's Black-Cockatoo nest in hollows of smooth-barked eucalypts, especially Salmon Gum (*Eucalyptus salmonophloia*) and Wandoo (*Eucalyptus wandoo*), but nests have also been found in other eucalypts, including York Gum (*Eucalyptus loxophleba*), Flooded Gum (*Eucalyptus rudis*), Tuart (*Eucalyptus gomphocephala*) and the rough-barked Marri (*Corymbia calophylla*). On the Swan Coastal Plain, most nests are in Tuart (Johnstone & Storr 1998). Breeding birds forage no more than approximately 20 km from their nesting hollows during the breeding season, so having sufficient foraging and water resources close to breeding areas is critical to its breeding success (Saunders 1980).

Regional Context

Approximately 17,000 ha of Carnaby's Black-Cockatoo habitat has been recorded within the City of Wanneroo, for which 0.1% of this is located on the site. Yanchep National Park to the north of the site contains some of the Northern Swan Coastal Plain's highest quality foraging habitat for the Carnaby's Black-Cockatoo, further with some 48,648 ha of habitat documented within a 20km radius of the National Park, **Figure 6** details areas of remnant vegetation in the region

District Context

Current data on distribution (using NatureMap) shows that Carnaby's Black-Cockatoo is known from numerous records and is extensive and widespread along the Northern Swan Coastal Plain. This includes records to the east of the project area in the vicinity of Eglinton and Carabooda. It also occurs to the north near Two Rocks and there are coastal records to the south around Marmion.

Analysis of vegetation mapping and recent mapping as a result of ground truthing in the *Alkimos-Eglinton District* area shows that the District is well represented when considering Carnaby's Black-Cockatoo habitat. The MRS amendment process resulted in the future protection (in perpetuity – as detailed in **Section 2.3**) of large areas representative of primary habitat (in particular *Banksia/Dryandra*) for the species. The *Alkimos-Eglinton District Structure Plan* will provide an area of over 500 ha which will retain and protect important remnant vegetation in the local area, consisting of a minimum of 133 ha of secure and protected Carnaby's Black-Cockatoo habitat. These large protected stands of suitable foraging habitat will provide important ecological stepping stones and consequently ensure the future use of local habitat and promote the recovery of the species in the local area.

Site Context

Lot 1004 contains 21.3 ha of potential Carnaby's Black-Cockatoo habitat (see **Figure 7**). Under the Local Structure Plan it is proposed to clear 21.1 ha of potential Carnaby's Black-Cockatoo habitat. The proposed loss of 21 ha of habitat on site relates to 0.04% of the protected regional habitat available (see **Regional Context** above) and is not considered significant in the broader regional context for the species.

However, consistent with Lend Lease's environmental policies and with broader conservation strategies for this species, Lend Lease is proposing conservation offsets for the loss of potential habitat within Lot 1004. Accordingly, in order to mitigate the loss of Carnaby's Black-Cockatoo habitat, LandCorp has, as part of the MRS amendment process for the *Alkimos-Eglinton District Structure Plan*, actively set aside 162.1 ha of important vegetation which contains 64.2 ha of Carnaby's Black-Cockatoo habitat to be retained in ROS within LandCorp's Alkimos holdings (**Figure 8**). This 64.2 ha is proposed to be used as a suitable mitigation offset for the loss of habitat within Lot 1004. The retention and protection in perpetuity of this important local vegetation equates to an area over three (3) times that to be cleared on site. Further details are provided in **Section 4**.

Mapping/Methods

The habitat areas referred to have been identified based on vegetation complex/association data and mapping produced by ATA environmental (2005) for the LSP site. Analysis of the mapping confirmed several indicator species on site being *Banksia attenuata*, *Banksia Menziesii*, *Dryandra sessilis*, *Eucalyptus Gomphocephala* and

Allocasuarina lehmanniana, these species have been used to calculate potential breeding and/or foraging habitat within the Alkimos LSP site.

A ground-truthing reconnaissance survey was also undertaken by Eco Logical Australia on 30 July and 17 August 2010 to confirm/verify (and update if and where required) habitat boundaries for Carnaby's Black-Cockatoo. On ground vegetation validation showed that the previous mapping was generally accurate, but required some amendments to increase some areas of potential habitat.

Sharks

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
<i>Carcharias taurus</i> (west coast population)	Grey Nurse Shark (west coast population)	Vulnerable	No
<i>Carcharodon carcharias</i>	Great White Shark	Vulnerable	No
<i>Rhincodon typus</i>	Whale Shark	Vulnerable	No

Insects

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
<i>Synemon gratiosa</i>	Graceful Sun Moth	Endangered	Likely

Graceful Sun Moth

The Graceful Sun Moth is a medium sized diurnal flying sun moth that is similar in appearance to a butterfly (WAISS 1993). Adults are active only in autumn, predominantly in March. Australian species of Castniid moth tend to breed on grasses, sedges and rushes, and the juvenile stages exist underground (Edwards 1997). The Graceful Sun Moth has been observed to oviposit on *Lomandra* species, which may prove to also be the foodplant.

The majority of known habitat sites are all located on Spearwood dune soils, with low open woodlands or low open forest dominated by Banksia and Eucalyptus. (DEWHA 2009d). Graceful Sun Moth occurs on the Swan Coastal Plain where it was thought to be confined to the Perth region between Wanneroo in the north, to Mandurah in the south. This distribution represents a linear range of approximately 80km having an area of approximately 234.05 km², of which the area of occupancy within this distribution is < 10 percent. Within this distribution, it is known to occur in very low numbers as subpopulations within remnant bushland reserves (CALM 2005). More recent (unpublished) studies indicate that the species occurs at least as far north as Yancheop.

Breeding tends to occur on grasses, sedges and rushes (WAISS 1991), and the juvenile stages exist underground (Edwards 1997). The Graceful Sun Moth is thought to breed exclusively on *Lomandra* species. *Lomandra hermaphrodita* is one known host plant species, although other *Lomandra* spp. including *L. maritima* may also be used. Current research suggests that Graceful Sun Moth may have a stronger association with *L. maritima* than previously thought (Bishop et.al 2009). Within a given bushland, these host plants must occur in sufficient number and density to sustain a viable population. Estimates for the minimum required number and density of host plants have not yet been determined.

Species Status

WA DEC have recently released (January 2011) Conservation Advice for the species. Based on the ongoing GSM research during 2009 and 2010 by WA DEC and via Graceful Sun Moth survey results provided to DEC by consultants, the known range of the Graceful Sun Moth has been significantly increased. Surveys to date indicate that GSM is recorded at substantially higher rates and density within the coastal *Lomandra maritima* habitat than in *L. hermaphrodita* of the banksia woodlands further inland.

Further, DEC have advised, should upcoming Graceful Sun Moth surveys significantly increase the Graceful Sun Moth distribution, it may accordingly no longer meet the sub-criterion of 'severely fragmented', and it is probable that would mean that the Graceful Sun Moth would not meet the criteria for *Endangered*, and that it may only meet either *Vulnerable* criteria or indeed may no longer be considered threatened.

WA DEC have further increased the species potential range in response to 2010 survey results (see Regional Context below), which have shown it may be possible to correctly identify the coastal dune habitat (*Lomandra maritima*) of the Graceful Sun Moth from aerial photography or other mapping. Accordingly there are likely to be

additional habitat areas of similar landform in private ownership and other lands in the DEC Midwest Region, which may also further increase known species habitat extent.

Regional Context

Prior to 2009, the Graceful Sun Moth had only been recorded in *Banksia* woodland containing the monocotyledon *Lomandra hermaphrodita* (Asparagaceae). In early 2009, new populations of the Graceful Sun Moth were located in coastal heathland associated with *Lomandra maritima*, a species closely related to the original host plant *L. hermaphrodita*. *Lomandra maritima* (the species found on site within Lot 1004) is abundant in coastal vegetation between Binningup and Shark Bay, accordingly the discovery of this new host plant meant it was possible that additional habitat and populations of Graceful Sun Moth may be found (DEC 2010).

The current range of the species extends from near Binningup, in the south, to Coolimba Rd, 8km north of Leeman, in the north (DEC 2010), a total linear extent of approximately 380 km. This extent of occurrence of the Graceful Sun Moth equates to an area of approximately 201,500 ha, a substantial increase from previous known extent of 23,000 ha. When considering area of occupancy (and habitat) for the species in the above findings, areas have increased from the previously thought 1,800 ha up to a total area of 4,260 ha (DEC 2010). If habitat anticipated to be occupied (following previous surveys) by Graceful Sun Moth is to be included, the expected regional area of occupancy may be as high as 11,900 ha. The DEC has estimated that approximately 39% of the current anticipated coastal heathland habitat is within dedicated conservation reserves.

District Context

The *Alkimos-Eglinton District Structure Plan* currently provides for the protection in perpetuity (within ROS) of over 127 ha of Graceful Sun Moth. This area of habitat to be conserved relates to over 1% of the known species habitat to be protected within adjacent reserves in the local area.

Site Context

The majority of the Lot 1004 is considered fragmented and partially degraded when compared to that of the larger Alkimos-Eglinton district, comprising vegetation of varying type and condition. The vegetation is predominantly Quindalup dune complex which is characterised by extensive areas with a low ground layer vegetation stratum dominated by *Lomandra maritima*. Current surveys and ground truthing throughout the site have predicted the area of potential habitat for the Graceful Sun Moth on site is approximately 95.8 ha. This area equates to 0.8% of the anticipated (DEC 2010) regional occupancy for the species.

Field Surveys

Given the presence of potential habitat for this species throughout the Alkimos LSP area targeted surveys were conducted in March 2010 by Eco Logical Australia (2010 – **Attachment 3**).

The LSP area was surveyed on four separate occasions between 2nd March 2010 and 12th March 2010 during the periods when Graceful Sun Moth are known to be flying. Surveys were undertaken to standard procedure stipulated by the Department of Environment and Conservation (DEC). Involving four replicate searches (on suitable separate survey days) to conclude the presence or absence of the GSM with a high degree of confidence within each survey area. The timing for Graceful Sun Moth survey is critical as it needs to coincide with the brief but seasonal period of peak moth activity. Accordingly the prescribed DEC methodology surveys must be undertaken during the peak activity period (usually the first two weeks of March). The survey must also be carried out during specific weather conditions and consider wind, temperature, sun light and time of day.

Results

The following table provides a breakdown of specimens observed throughout Lot 1004 during each survey.

Survey Date	2 March	5 March	8 March	12 March
Moths recorded	5	7	27	32

A total of **71** specimens were recorded within Lot 1004 over the four day survey. Within the project area Graceful Sun Moths were consistently recorded occurring in areas with low vegetation community structure that were dominated by *Lomandra maritima* (**Figure 9**).

Surveys throughout the site and southern holdings and in particular habitat within areas of Regional Open Space found many specimens that will ultimately be preserved and maintained in perpetuity within these areas of conservation.

Mitigation

Given the above, it is considered highly unlikely that any significant impacts, either direct or indirect will occur on Graceful Sun Moth or its habitat within the proposed development. The relative abundance of the species on site suggests that at a larger regional scale, habitat and indeed species numbers is much greater than previously known.

Based on survey result and habitat assessments, it is estimated that Lot 1004 contains 95.8 ha of Graceful Sun Moth habitat, 20.6 ha of this habitat is to be conserved in perpetuity adjacent the site within abutting Regional Open Space. Additionally, a further 25 ha of habitat is to be protected in local ROS (to the north and east of the site) within the southern Alkimos holdings (**Figure 10**). This combined area of habitat conservation for the Graceful Sun Moth totals 45.6 ha to be protected in perpetuity.

Additionally, Lend Lease is currently increasing scientific knowledge on the species (via additional 2011 surveys, in consultation with DEC) both within the site and surrounding habitat. Study efforts have been aimed at interpreting the number and size of local populations as well as the assessment of habitat characteristics to assist in determining minimum patch sizes and specimen numbers required for minimum viable populations.

Mammals

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll	Vulnerable	Unlikely
<i>Balaenoptera musculus</i>	Blue Whale	Endangered	No
<i>Eubalaena australis</i>	Southern Right Whale	Endangered	No
<i>Megaptera novaeangliae</i>	Humpback Whale	Vulnerable	No
<i>Neophoca cinerea</i>	Australian Sea-lion	Vulnerable	No

Reptiles

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
<i>Caretta caretta</i>	Loggerhead Turtle	Endangered	Unlikely
<i>Chelonia myda</i>	Green Turtle	Vulnerable	Unlikely
<i>Dermochelys coriacea</i>	Leatherback Turtle, Leathery Turtle, Luth	Endangered	Unlikely

Plants

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
<i>Grevillea curviloba subsp. incurva</i>	Narrow curved-leaf Grevillea	Endangered	Unlikely
<i>Lepidosperma rostratum</i>	Beaked Lepidosperma	Endangered	Unlikely

Previous surveys on site have not identified any *Grevillea curviloba subsp. incurva* nor *Lepidosperma rostratum*

Threatened Ecological Communities

Common name	EPBC listing status	Likelihood of Occurrence
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Unlikely

Vegetation surveys on site did not identify any EPBC Act listed ecological communities.

3.1 (e) Listed migratory species

Description

A total of twenty three (23) listed migratory species were identified from the search undertaken using the DEWHA online EPBC Act Protected Matters Search Tool (PMST). A full listing of these species is provided below.

Nature and extent of likely impact

Again, the likelihood of occurrence was determined and expressed using the five terms as defined in section 3.1(d). It was found to be unlikely that any of the listed migratory species identified in the Protected Matters search report would occur on site. Each of the species considered have large natural distributions and are found in a variety of areas throughout Australia, many from the report being marine based species. Consequently, there is not likely to be any impact on these migratory species as a result of the proposed project.

Mammals

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
<i>Balaenoptera edeni</i>	Bryde's Whale	Migratory	No
<i>Balaenoptera musculus</i>	Blue Whale	Migratory	No
<i>Caperea marginata</i>	Pygmy Right Whale	Migratory	No
<i>Eubalaena australis</i>	Southern Right Whale	Migratory	No
<i>Lagenorhynchus obscurus</i>	Dusky Dolphin	Migratory	No
<i>Megaptera novaeangliae</i>	Humpback Whale	Migratory	No
<i>Orcinus orca</i>	Killer Whale, Orca	Migratory	No

Sharks

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
<i>Carcharodon carcharias</i>	Great White Shark	Vulnerable	No
<i>Rhincodon typus</i>	Whale Shark	Vulnerable	No

Reptiles

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
<i>Caretta caretta</i>	Loggerhead Turtle	Endangered	Unlikely
<i>Chelonia myda</i>	Green Turtle	Vulnerable	Unlikely
<i>Dermochelys coriacea</i>	Leatherback Turtle, Leathery Turtle, Luth	Endangered	Unlikely

Birds

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Migratory	Potential
<i>Hirundapus caudacutus</i>	White-throated Needletail	Migratory	Unlikely
<i>Merops ornatus</i>	Rainbow Bee-eater	Migratory	Potential
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	Migratory	Unlikely
<i>Rhipidura rufifrons</i>	Rufous Fantail	Migratory	Unlikely

<i>Xanthomyza phrygia</i>	Regent Honeyeater	Migratory	Unlikely
<i>Ardea alba</i>	Great Egret	Migratory	Unlikely
<i>Ardea ibis</i>	Cattle Egret	Migratory	Unlikely
<i>Gallinago hardvickii</i>	Latham's Snipe	Migratory	Unlikely
<i>Rostratula benghalensis s. lat.</i>	Painted Snipe	Migratory	Unlikely
<i>Apus pacificus</i>	Fork-tailed Swift	Migratory	Unlikely

White-bellied Sea-Eagle is distributed throughout coastal areas of Australia, with breeding pairs mainly occurring along the east coast from Queensland to Victoria and Tasmania (DEWHA 2009). Their distribution is thought to be influenced by climatic conditions, moving from inland rivers to coastal areas during dry seasons.

The White-bellied Sea-eagle forages over large open fresh or saline water bodies, coastal seas and open terrestrial areas (Marchant & Higgins 1993, Simpson & Day 1999). Breeding habitat consists of tall trees, mangroves, cliffs, rocky outcrops, silts, caves and crevices and is located along the coast or major rivers. Breeding habitat is usually in or close to water, but may occur up to a kilometer away (Marchant & Higgins 1993).

There have been no surveyed records of the White-bellied Sea-eagle within Alkimos. The species is unlikely to use the site for foraging, but may transit through the study area to either inland or coastal areas to forage and breed. There are no known nesting sites within the Alkimos LSP site. As the proposed development is unlikely to impact ecologically significant proportions of the population of the White-bellied Sea-eagle, significant impacts on the survival of this migratory species are considered unlikely to occur.

The **Rainbow Bee-eater** is most often found in open forests, woodlands and shrublands, and cleared areas, usually near water. Found on farmland areas with remnant vegetation and in orchards and vineyards. Often recorded nesting using disturbed sites such as sand quarries, cuttings and mines to build its nesting tunnels.

Southern Australian populations move north, often in huge flocks, during winter; northern Australian populations are present year round. Often gathers in small flocks before returning to summer breeding areas after over-wintering in the north (apart from the resident northern populations). Human activities can disrupt Rainbow Bee-eater nests built in active mines or quarries.

Given the wide geographic range of this species and the range of habitats in which this species forages, site represents potential foraging and seasonal breeding habitat. The site does not however represent significant foraging or breeding habitat, and the proposed development is unlikely to impact ecologically significant proportions of the population of Rainbow Bee-eater. Significant impacts on the survival of this species are considered unlikely to occur

3.1 (f) Commonwealth marine area

Description

No Commonwealth marine areas occur within the vicinity of the project area.

Nature and extent of likely impact

N/A

3.1 (g) Commonwealth land

Description

There is no Commonwealth land within the project area or its vicinity.

Nature and extent of likely impact

N/A

3.1 (h) The Great Barrier Reef Marine Park

Description

N/A

Nature and extent of likely impact

N/A

3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, or actions taken on Commonwealth land

3.2 (a)	Is the proposed action a nuclear action?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

3.2 (b)	Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

3.2 (c)	Is the proposed action to be taken in a Commonwealth marine area?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))

3.2 (d)	Is the proposed action to be taken on Commonwealth land?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))

3.2 (e)	Is the proposed action to be taken in the Great Barrier Reef Marine Park?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))

3.3 Other important features of the environment

3.3 (a) Soil and vegetation characteristics

The subject site is in the Swan Coastal Plain Biogeographic Region, which consists of the Cottosloe vegetation Complex – Central and South (52) on the spearwood dune system and Quindalup Vegetation Complex (55) on the Quindalup dune system. The site contains Quindalup dune formations (predominantly Q3) comprised of unconsolidated sand and shell of calcium carbonate. Surface layers contain accumulated organic matter.

Remnant vegetation of the Quindalup vegetation complex covers approximately 50% of the site. Current assessments (RPS 2009) on site note a history of grazing on site, mainly in the more level dunal basins, where weeds now prevail. The majority of good condition vegetation, dominated by *Melaleuca systema* and *Lomandra maritima*, is found on the less intensively grazed ridges. Scattered Tuarts (*Eucalyptus gomphocephala*) also persist in areas sheltered from prevailing winds.

3.3 (b) Water flows, including rivers, creeks and impoundments

A small wetland known as Karli Spring is the only surface water feature in the vicinity of the site, located in the inter-dunal depression of the foreshore reserve in the south west of the site within ROS.

3.3 (c) Outstanding natural features, including caves

The parabolic dunes in the area, being situated upon the coastal limestone plateau are considered unusual for the region. Accordingly, the Alkimos LSP planning process has accounted for dedicated areas of POS to maintain and protect important dunal landforms.

3.3 (d) Gradient

The site varies from 1m in the west to 45m (AHD) above sea level in the east of the site (DoW, 2000). The landscape is undulating with swales between the dune phases.

3.3 (e) Buildings or other infrastructure

There is currently no structures or infrastructure on site. The WaterCorp Waste Water Treatment Plant lies adjacent the subject site to the north.

3.3 (f) Marine areas

The Indian Ocean is directly to the west of the subject site and Alkimos beach. A coastal foreshore reserve is also situated between the beach and subject site

3.3 (g) Kinds of fauna & flora

A number of fauna surveys for the Alkimos region have been completed over the last 20 years. A review of these surveys was undertaken (RPS 2009), to determine the fauna species most likely to occur at the present time. Several state significant species were identified including reptiles, mammals, insects and many birds. Those of federal importance were *Calyptorhynchus latirostris* (Carnaby's Black-Cockatoo) and *Synemon gratiosa* (Graceful sun moth).

The site contains two floristic community types (FCTs), listed by DEC as priority 3 (indicating that the community is poorly known). The two FCTs are as follows:

- FCT24 – Northern Spearwood shrubland and woodlands
- FCT29b – Acacia shrubland on taller dunes, southern Swan Coastal Plain

3.3 (h) Current state of the environment in the area

The majority of the site consists of coastal dunes. Recent assessments on site note a history of grazing. The site has been described as 'completely degraded' to 'very good' condition (ATA 2005).

3.3 (i) Other important or unique values of the environment

There are no other important or unique values known on site

3.3 (j) Tenure of the action area (eg freehold, leasehold)

The property is owned by LandCorp.

3.3 (k) Existing land/marine uses of area

Before being rezoned as urban under the Metropolitan Region Scheme, the land was largely used for rural/agricultural purposes.

3.3 (I) Any proposed land/marine uses of area

The land is proposed for use as a residential development.

4 Measures to avoid or reduce impacts

Mitigation

A series of mitigation and management measures are proposed to reduce impacts on matters of NES that may be potentially impacted by the development. Mitigation is focussed on reducing any impacts associated with clearing of vegetation considered to be potential Carnaby's Black-Cockatoo or Graceful Sun Moth habitat.

Measures proposed are:

Carnaby's Black-Cockatoo

- Dedicated areas of foraging habitat have been set aside by Lend Lease; both abutting (on site) and within nearby local Regional Open Space (ROS) see **Figures 7 & 8**. Dedicated areas of Public Open Space (POS) will be provided throughout the site, with efforts aimed at retaining and further increasing foraging habitat (see measures 3 and 4 outlined below).
- Areas abutting the site were specifically chosen for Regional Open Space, given their potential quality for Carnaby's Black-Cockatoo habitat. These areas will provide increased conservation value both locally and regionally, forming ecological linkages between Yanchep National Park and Neerabup National Park.
- Trees planted within the proposed development as part of landscaping will include suitable foraging species (such as *Banksia* and *Dryandra*) for feeding and potential future roosting/nesting (including suitable *Eucalyptus* species) for Carnaby's Black-Cockatoo.

Additionally, it is proposed to mitigate the impact of clearing any potential habitat for the Carnaby's Black-Cockatoo, through the creation and retention/protection of (the equivalent) of approximately 70 hectares of suitable habitat. This will be achieved via the following measures:

1. the retention and protection in perpetuity of 64.2 ha of high quality habitat bushland for the species, which has been set aside by LandCorp within areas ROS both abutting Lot 1004 and in the immediate local area;
2. the provision of suitable on-site quality topsoil for the purposes of land rehabilitation being made available to WA DEC as required, during the development process.
3. the creation of habitat through revegetation and rehabilitation of 2 ha of bushland within areas of 'Conservation POS' on site; and
4. the planting of (1500) Carnaby's Black-Cockatoo food and potential nesting plants throughout the development, equating to 3 ha of bushland, based on average vegetation density in the area which currently contains an estimated 500 foraging trees per hectare.

This area to be conserved (~70 ha) equates to retaining and protecting over three times that to be cleared on site (21 ha).

Considering the above mitigation measures, accordingly, Lend Lease are willing to contribute to greater protection and ongoing management of habitat areas set aside for conservation, particularly those areas within ROS. In conjunction with the City of Wanneroo and the WA Department of Environment and Conservation, Lend Lease are preparing greater tenure protection and management funding arrangements to further improve the conservation status of the offset areas. Further, Lend Lease is also currently working with WA DEC to acquire suitable areas of priority habitat for the Carnaby's Black-Cockatoo. Refer to the summary table below.

Mitigation and Offsets Summary Table

Conservation Component	Description	Area	Offset ratio	Outcome
Onsite Mitigation				
Retention and creation of CBC habitat on site	2 ha of good condition CBC habitat retained as Conservation Open Space and to be ceded to the City of Wanneroo to be	2 ha	0.1:1	The retention of remnant and creation of preferred habitat on site to

	managed for conservation			provide/retain suitable areas for ongoing foraging
Planting of CBC habitat within landscape and streetscape plantings	Preferred CBC habitat trees utilised in streetscapes where appropriate throughout the development area	3 ha	0.1:1	The creation of foraging habitat throughout the development, to increase feeding possibilities.
Offsite Mitigation				
ROS Offset Area	Conservation of adjacent Offset area (<i>Alkimos ROS</i>), set aside during project planning for the purposes of species habitat recovery and protection, directly abutting the project site in the local area	64 ha	3:1	Protection in perpetuity of high quality CBC habitat within the local area (abutting the site within secure ROS)
Offsite Acquisition	Provision of funds to the DEC for the purpose of acquisition of approximately 60 ha of land supporting Carnaby's Black-Cockatoo habitat in the Gingin region or similar	~60 ha	2.9:1	Secured priority habitat managed for conservation and species recovery in perpetuity
Total Offset Ratio		129 ha	6.2:1	

Graceful Sun Moth

Key measures proposed to protect Graceful Sun Moth involves the retention of in excess of 45.6 ha of Graceful Sun Moth habitat in surrounding ROS and onsite retained and protected Conservation POS. Accordingly, the proposal is not considered to have a significant impact to the species, given the areas of Graceful Sun Moth habitat being conserved (in perpetuity) by Lend Lease. The improved management of these areas will reduce any decline in *Lomandra maritima* as a result of coastal processes, uncontrolled access, trampling and also weed invasion. This will act to further conserve habitat in this site for the Graceful Sun Moth.

Additionally, Lend Lease is currently increasing scientific knowledge on the species (via additional 2011 surveys, in consultation with DEC) both within the site and surrounding habitat. Study efforts have been aimed at interpreting the number and size of local populations as well as the assessment of habitat characteristics to assist in determining minimum patch sizes and specimen numbers required for minimum viable populations.

Refer to the summary table below for proposed mitigation and offsets.

Mitigation and Offsets Summary Table

Conservation Component	Description	Area	Offset ratio	Outcome
Onsite Mitigation				
Retention of GSM habitat on site	Retention of good to very good condition GSM habitat retained as Conservation Open Space and ceded to the City of Wanneroo to be managed for conservation	4.5 ha	0.1:1	The retention of remnant habitat on site to provide/retain suitable areas for ongoing foraging

Offsite Mitigation				
Adjacent to site ROS Offset habitat for conservation	Conservation of Offset area (<i>ROS as regional parks and recreation</i>), set aside during project planning for the purposes of species habitat recovery and protection, directly abutting the project site to the west.	16.1 ha	0.2:1	Protection in perpetuity of high quality GSM habitat within the local area directly abutting the site
Local area ROS Offset habitat for conservation	Conservation of dedicated Offset areas (<i>Alkimos ROS</i>), set aside during project planning for the purposes of species habitat recovery and protection, directly abutting the project site in the local area	25.0 ha	0.3:1	Protection in perpetuity of high quality GSM habitat within the local area
Total Offset Ratio		45.6 ha	0.6:1	

5 Conclusion on the likelihood of significant impacts

5.1 Do you THINK your proposed action is a controlled action?

<input checked="" type="checkbox"/>	No, complete section 5.2
<input type="checkbox"/>	Yes, complete section 5.3

5.2 Proposed action IS NOT a controlled action.

The proposed development will involve clearing of 21.1 ha of vegetation which is associated with potential Carnaby's Black-Cockatoo habitat (**Figure 7**). This is not considered to pose a significant impact on the species for the following reasons:

- The large areas of potential foraging habitat in the region and particularly within a 20 kilometre range on Yanchep National Park including State Forest, roadside verges and pine plantations, Neerabup National Park and the proposed Gngangara Regional Park (see section 3.1d).
- The fact that Carnaby's Black-Cockatoo foraging habitat was an assessed matter by the EPA in its report and recommendation on MRS Amendment 1029/33 with a subsequent increase in the area of significant vegetation retained and set aside in ROS (**Figure 8**) by landholders.
- Lend Lease are proposing to protect in perpetuity important foraging habitat which totals in size over three (3) times that proposed to be cleared by the Action at Lot 1004.
- Large areas of habitat within the area are subject to several threatening processes due to the impacts of weeds, wind erosion and uncontrolled access throughout the Alkimos area. Further security and management for this vegetation will provide greater protection from these threats.

The proposed development will involve clearing of 75.2 ha of vegetation which is associated with potential Graceful Sun Moth habitat (**Figure 9**). This is not considered to pose a significant impact on the endangered species for the following reasons:

- Large areas (in excess of 45 ha) of Graceful Sun Moth habitat is being conserved by Lend Lease in surrounding ROS and onsite retained Conservation POS (**Figure 10**).
- Relative abundance of the species on site (and in the district area) suggests that at a larger regional scale, habitat and indeed species numbers is much greater than previously known.

5.3 ~~Proposed action IS a controlled action~~

Matters likely to be impacted

<input type="checkbox"/>	sections 12 and 15A (World Heritage)
<input type="checkbox"/>	sections 15B and 15C (National Heritage places)
<input type="checkbox"/>	sections 16 and 17B (Wetlands of international importance)
<input type="checkbox"/>	sections 18 and 18A (Listed threatened species and communities)
<input type="checkbox"/>	sections 20 and 20A (Listed migratory species)
<input type="checkbox"/>	sections 21 and 22A (Protection of the environment from nuclear actions)
<input type="checkbox"/>	sections 23 and 24A (Marine environment)
<input type="checkbox"/>	sections 26 and 27A (Protection of the environment from actions involving Commonwealth land)

section 28 (Protection of the environment from Commonwealth actions)

Sections 27B and 27C (Commonwealth Heritage places outside the Australian Jurisdiction)

6 Environmental history of the responsible party

	Yes	No
<p>6.1 Does the party taking the action have a satisfactory record of responsible environmental management?</p> <p>Lend Lease has an excellent record of environmental management and sustainability. It has worked closely with community as well as local and state authorities to ensure site responsive outcomes. Examples of this include returned effluent treatment and reuse systems, seed collection and propagation programmes with both Landcare and Greening Australia, undertaking HIA Green Smart programmes across a number of projects, provision of site based management plans across all communities, generation of site based urban design outcomes (in consultation with the local authorities), water recycling programmes at a number of communities, waterway and corridor management plans ensuring no impact into downstream wetlands and builder's water recycling programmes. Additional to this, Lend Lease undertakes community education and interaction programmes throughout all of its communities in creating a high level of social capital.</p> <p>Lend Lease has won a number of national Urban Development Institute of Australia awards for master planned communities. These awards are recognition for the comprehensive planning and implementation of site specific outcomes in working with all constraints including the provision of environmental and sustainability initiatives. Also, two of our communities, Twin Waters and Golden Grove, have won the global Prix d'Excellance awarded by the International Real Estate Federation for best community.</p>	X	
<p>6.2 Has the party taking the action ever been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources?</p> <p>If yes, provide details</p>		X

<p>6.3 If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework?</p> <p>The supporting documentation demonstrates the action is in accordance with Lend Lease's vision:</p> <p>"Lend Lease is committed to balanced economic, social and environmental outcomes and a legacy of a better world for future generations".</p> <p>In addition, Lend Lease's Sustainability Framework monitors and assesses design and sustainability performance across its range of projects throughout Western Australia. Our vision is to become the lead agency for the practical demonstration of sustainable development by 2012 and our Sustainability Framework includes a number of strategies, processes and procedures such as:</p> <ul style="list-style-type: none"> • A system for tracking and measuring corporate performance • A strategy for innovation • A system for the sustainability assessment of projects • A project design review process • A process for visioning and objective setting • Providing guidelines for purchasers to achieve design outcomes • Sustainable development policies <p>The proposed action is governed by all the above - many of which are already demonstrated in the supporting documentation provided.</p> <p>Lend Lease environmental policy seeks to minimise its environmental impact, control waste, prevent pollution, use resources effectively and act with consideration for our neighbours. Additionally, Lend Lease identifies compliance with legislation as a minimum and will apply global best practice and innovations where legislation does not exist. Lend Lease implements management systems, sets goals and measures targets against clear objectives. These are regularly reviewed. Lend Lease also provides specific training to staff to ensure a thorough understanding of the Lend Lease commitment and its interface with the environment.</p> <p>Sustainability and environmental management reporting by Lend Lease is assessed against Global Reporting Initiatives. These initiatives are international guidelines set by the Coalition for Environmentally Responsible Economies and the UN Environment Programme. The initiatives will be site specific and feed into the global Lend Lease reporting structure. The action, therefore, will be undertaken, monitored and measured in accordance with the Lend Lease environment policy.</p>	X	
<p>6.4 Has the person proposing to take the action previously referred an action under the EPBC Act?</p> <p>2004/1921 Lend Lease /Urban and commercial new development/Caroline Springs/VIC/Caroline Springs residential development (northern sector)</p> <p>2005/1935 Lend Lease /Urban and commercial new development/Caroline Springs/VIC/Caroline Springs Residential Development (middle sector)</p> <p>2006/3057 Delfin Craigieburn Pty Ltd/Residential development/Craigieburn/VIC/Fairways North residential development</p> <p>2007/3574 Lend Lease/Commercial development/Bruce Highway, Julago, 12 km south east of Townsville CBD/QLD/Development and Construction of Rocky Springs Masterplanned Community</p> <p>2010/5381 Lend Lease Limited/Residential development/Calderwood Valley, Illawarra Region/NSW/Calderwood Urban Development</p>	X	

7 Information sources and attachments

7.1 References

Alan Tingay and Associates, 1997 - *Alkimos-Eglinton Environmental Report*

ATA Environmental, 2003 - *Alkimos-Eglinton Environmental Review*

ATA Environmental, 2005 - Metropolitan Region Scheme Amendment 1029/33: *Alkimos-Eglinton Flora, Fauna and Vegetation Baseline Information*

Department of the Environment, Water, Heritage and the Arts (2009b). *Synemon plana*; in *Species Profile and Threats Database*, Department of the Environment, Water, Heritage and the Arts, Canberra. Available from: <http://www.environment.gov.au/sprat>. Accessed 2009-08-09.

Department of Environment and Conservation 2010 – *Conservation of the Graceful Sun Moth habitat*

Eco Logical Australia 2010 – *Graceful Sun Moth Survey for Alkimos LSP*

Edwards, T. (1997). *Moths in the sun*. ANIC News. 10:1-3.

RPS Bowman Bishaw Gorham, 2006 - *Environmental assessment of the Alkimos-Eglinton District Structure Plan*

RPS Environment and Planning Pty Ltd 2009 - *Alkimos Local Structure Plan Environmental Assessment – Part Lots 101 and 1004 Alkimos*

Trudgen and Keighery, 1990 - *A Report on the Flora and Vegetation of the Alkimos Area and Conservation Issues Affecting It*.

Western Australian Insect Study Society (WAISS) (1993). *Moth studies* in the CSIRO. Western Australian Insect Study Society Inc. Newsletter. April:2-4.

7.2 Reliability and date of information

Information used in the preparation of this referral is based on a number of reports and studies developed to inform both the Western Australian and Commonwealth approval processes. These studies have been undertaken by professional consultants who are expert in their respective fields.

All ecological studies have been undertaken by expert ecologists with practical experience in surveying and monitoring the local environment.

7.3 Attachments

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the project locality (section 1)	✓	Attachment 1 - Figures
	figures, maps or aerial photographs showing the location of the project in respect to any matters of national environmental significance or important features of the environments (section 3)	✓	Attachment 1 - Figures
If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.3)	N/A	
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.4)	N/A	
	copies of any flora and fauna investigations and surveys (section 3)	✓	Attachment 3
	technical reports relevant to the assessment of impacts on protected matters and that support the arguments and conclusions in the referral (section 3 and 4)	✓	Attachment 3
	report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)	N/A	

8 Contacts, signatures and declarations

Project title:

8.1 Person proposing to take action

Name Anne Jolic
Title Project Director
Organisation Lend Lease
ACN / ABN 145 185 468
Postal address Level 2, 100 Royal Street, East Perth WA 6004
Telephone 08 9223 2825
Email anne.jolic@lendlease.com.au
Declaration I declare that the information contained in this form is, to my knowledge, true and not misleading. I agree to be nominated as the proponent for this action.

Signature  Date 24.3.2011

8.2 Person preparing the referral information (if different from 8.1)

Name Brendan Dowd
Title Environmental Consultant
Organisation Eco Logical Australia
ACN / ABN 87096512088
Postal address PO Box 237 West Perth BC, WA, 6872
Telephone 0404 214 940
Email brendand@ecoaus.com.au
Declaration I declare that the information contained in this form is, to my knowledge, true and not misleading.

Signature  Date 25.2.2011

Attachments

Attachment 1: Figures

Attachment 2: Protected Matters Search

Attachment 3: Graceful Sun Moth Survey Report

**Attachment 4: Local Environmental Impact Assessment &
Management Strategy – Part Lot 1004 Alkimos**