Department of Planning and Environment

Our ref: DOC22/1024259 Your ref: Planning Proposal PP-2022-3978

Adrian Hohenzollern
Director Western District
Department of Planning and Environment
4 Parramatta Square, 12 Darcy Street
Parramatta NSW 2150

19 December 2022

Subject: Exhibition – Planning Proposal Mt Gilead Stage 2

Mr Hohenzollern

I refer to your email received on 21 November 2022 via the planning portal advising Environment and Heritage Group (EHG) that the Department of Planning and Environment, Planning Group (DPE Planning) has placed the planning proposal for Mt Gilead Stage 2 on public exhibition until 19 December 2022.

In its previous comments dated 8 August 2022 on the final Gilead Stage 2 Technical Assurance Panel (TAP) package, EHG advised that in the absence of an amended Biodiversity Certification application, it *is unable to provide detailed comments regarding biodiversity. EHG also notes that documents provided in the final proposal package are incomplete regarding biodiversity (for example, the Gilead Planning Report references x ha and 'holding image only' for biodiversity).*

Furthermore, EHG advised that it *has formed the view that insufficient information in regard to biodiversity has been provided to inform the proposal and the indicative structure plan. EHG therefore does not support the public exhibition of the proposal until it has been provided the amended biodiversity certification application including the submissions report and undertaken a review. It is also important to note that EHG's assessment of the amendment application will have implications for the proposal including the boundaries of the proposed urban development footprint and land uses in the structure plan. It will also form the basis of EHG's advice to the Minister for Environment and Heritage on whether re-exhibition of the application is warranted.*

In response to the above, on 15 September 2022 DPE Planning provided EHG with a copy of the *Biodiversity Certification Assessment Report & Biocertification Strategy* version 6 dated 5 September 2022 (Biodiversity Certification Assessment Report and Strategy). On 21 September 2022, EHG advised DPE Planning that the Biodiversity Certification Assessment Report and Strategy was inconsistent with the TAP advice and that EHG would not be undertaking a detailed review of the report until it was updated to be consistent with the TAP advice. An updated Biodiversity Certification Assessment Report and Strategy has not been provided to EHG for review.

EHG has reviewed the relevant exhibited documents and provides comments on biodiversity and flood risk management matters in Attachment 1. Regarding biodiversity, the exhibited *GLN Gilead Planning Report Lendlease Communities (Figtree Hill) Pty Ltd* (Gilead Planning Report) states *The Planning Proposal is supported by an application to Biodiversity Certify the land to establish clear conservation and development areas*. As the planning proposal relies on the Biodiversity Certification Assessment Report and Strategy (dated 15 November 2022- Appendix C in the Gilead Planning

Report) to address biodiversity impacts and to support the proposed land use zone boundaries and structure plan including the extent of the urban development zone, EHG has provided comments on this report. As explained in Attachment 1, the comments should not be considered an exhaustive assessment of the proposal in accordance with the Biodiversity Certification Assessment Methodology.

In summary, EHG considers that the proposal is inconsistent with advice and recommendations contained in the *Office of Chief Scientist and Engineer (OCSE) Advice on the protection of the Campbelltown Koalas* and the follow up reports (OCSE Koala reports) and TAP. Insufficient information has been provided to support the proposed zone boundaries and structure plan including the extent of the proposed urban development zone and land proposed for certification, and the clearing of 53.5 hectares of native vegetation and threatened species habitat which includes critically endangered and endangered ecological communities.

Upon lodgement of an amended application for biodiversity certification (including associated BCAM calculator data and amended shapefiles) that adequately addresses the comments in this submission and meets the requirements and recommendations of the OCSE Koala reports, EHG will undertake a more detailed review and provide further comments.

Given the above, EHG does not support the exhibited planning proposal, including the structure plan or the Biodiversity Certification Assessment Report and Strategy.

If you have any queries, please contact Susan Harrison on susan.harrison@environment.nsw.gov.au or 02 9995 6864.

Yours sincerely,

Louisa Clark
Director
Greater Sydney
Biodiversity and Conservation

Attachment 1 – EHG comments on exhibited Mt Gilead Stage 2 planning proposal

Biodiversity

Current status of the biodiversity certification application
Campbelltown City Council, as the applicant, publicly exhibited its Mt Gilead Stage 2 biodiversity certification application in December 2020. While EHG has not undertaken a review of the exhibited application, it is noted that it is inconsistent with advice and recommendations contained in the *Office of Chief Scientist and Engineer (OCSE) Advice on the protection of the Campbelltown Koalas* and the follow up reports (OCSE Koala reports). It is therefore important to note that EHG has not indicated support for the biodiversity certification application, which requires submission to the Minister for the Environment and Heritage for a decision.

EHG notes that the *Mt Gilead Stage 2 Biodiversity Certification Assessment Report and Biocertification Strategy* (Biodiversity Certification Assessment Report and Strategy) which is Appendix C of the exhibited *GLN Gilead Planning Report Lendlease Communities (Figtree Hill) Pty Ltd* (Gilead Planning Report), advises that *This Stage 2 assessment has been prepared consistent with the Stage 1 agreements reached with OEH and other biodiversity certification assessments in the Sydney region*. To date, this has not been agreed to for the Mt Gilead Stage 2 application.

Regarding the site visit undertaken with EHG on 7 June 2022 to inspect the vegetation type and condition, the applicant's consultant indicated that they had technical questions regarding the Biodiversity Certification Assessment Methodology (BCAM) that needed to be addressed. EHG advised the consultant to email the questions so that a response could be provided. To date, EHG has not received the request for advice on the technical questions.

GLN Gilead Planning Report
Regarding biodiversity, the Gilead Planning Report makes a number of statements about biodiversity including:

- Table 1 C. *Biodiversity Certification Application and Strategy - The scale and shape of the conservation areas has been a critical element to the refinement of land use zones and the draft Structure Plan.*
- *The Urban Design Report and draft Structure Plan have been informed by a suite of technical studies to confirm the capability of land, approach to infrastructure, place shaping attributes and importantly, the Biodiversity Certification application that was endorsed by Council in December 2020 and the CSEK Report* (p 30).
- *The Biodiversity Certification Strategy makes provision for the protection of existing vegetation and habitat reconstruction that will deliver parts Koala Corridor A (Menangle Creek), Koala Corridor B (Woodhouse Creek) and Nepean River Corridor in line with the advice of the Chief Scientist and Engineer* (p 34).
- *The Planning Proposal is supported by an application to Biodiversity Certify the land to establish clear conservation and development areas. The Biodiversity Certification will ensure the conservation of existing areas of significant vegetation as well as provide for the reconstruction of habitat and fauna corridors on land that has been cleared for historic agricultural uses that would not be achieved without this land use change. Land to be conserved and reconstructed for habitat purposes is to be zoned C2 Environmental Conservation and funding secured via the registration of BioBank Agreements* (p 41).
- *The Planning Proposal nominates the establishment of a recreation area on the eastern bank of the Nepean River……. Specific provision has been made within the Biodiversity Certification Application*

to provide for access through existing native vegetation (generally along the previous mining access tracks) to the recreation area (p 50).

- *As shown in Figure 15 the Biodiversity Certification application, strategy and draft Structure Plan provides for:*
  - *Conservation of significant areas of existing native vegetation.*
  - *Fauna habitat reconstruction of heavily disturbed grazing land.*
  - *Two fauna crossings at Noorumba Reserve and Beulah that will establish two of the three fauna corridors between the Georges River and Nepean River identified in Greater Macarthur 2040 and the Chief Scientists' Report on Campbelltown Koala along Menangle Creek and Woodhouse Creek. Noting the third fauna corridor is located further south of the Site in Greater Macarthur 2040.*
  - *Protection of the conservation and habitat reconstruction areas through the use of the C2 Environmental Conservation zone.*
  - *Rehabilitation, management and funding for the conservation areas through the registration of Biodiversity Stewardship Agreements Secure and retire species offset credits for impacts not able to be avoided or mitigated on Site.*

The above measures provide for upfront avoidance of impact followed by on-site mitigation as far as practical. The purchase of offsetting credits have only been relied upon as a last resort where the ability to re-establish the necessary credits would provide a substandard result versus the preservation of intact vegetation (p 54).

As the Gilead Planning Report relies on the Biodiversity Certification Assessment Report and Strategy in Appendix C to address biodiversity impacts and to support the planning proposal structure plan and proposed land use zone boundaries, including the extent of the urban development zone, further comment on this report is provided below.

As part of exhibition of the planning proposal, the planning portal contains two documents titled 'Mt Gilead – Stage 2 Biodiversity Certification Assessment Report & Biocertification Strategy', with one being dated 5 September 2022, and the other dated 15 November 2022 (both written by Eco Logical Australia). The comments in this submission are based on the latter document dated 15 November 2022.

App C – Mt Gilead Stage 2 Biodiversity Certification Assessment Report and Strategy dated November 2022 (version 7)

It is important to note that the following comments should not be considered an exhaustive assessment of the proposal in accordance with the BCAM. Furthermore, the applicant did not provide the BCAM calculator data and shapefiles which has limited EHG in its consideration of proposal at this time.

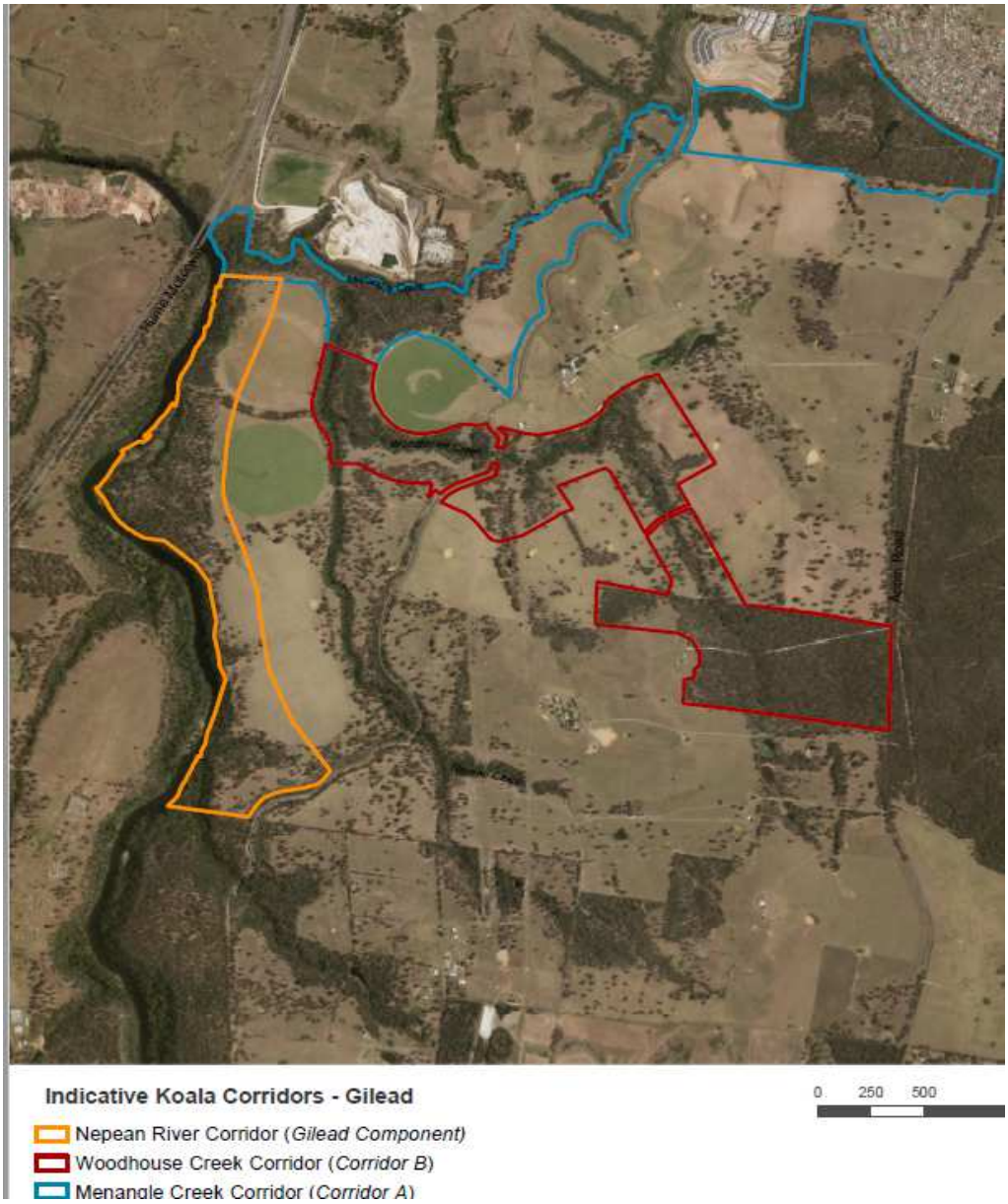
Upon lodgement of an amended application for biodiversity certification (including associated BCAM calculator data and amended shapefiles) that adequately addresses the following comments and meets the requirements and recommendations of the *Office of Chief Scientist and Engineer Advice on the protection of the Campbelltown Koalas* and subsequent reports, EHG will undertake a more detailed review and provide comments.

<u>Office of Chief Scientist and Engineer (OCSE) Advice on the protection of the Campbelltown Koalas</u>

It is understood that DPE Planning provided the koala corridor map below to Lendlease on 8 December 2021 and advised that: *The map at Attachment 1 reflects the outcomes of those investigations and is the current indicative mapping for these corridors. These corridors apply the*

recommendations and subsequent advice of the Office of the NSW Chief Scientist & Engineer (OCSE) and will provide valuable inputs into the draft proposal to be reviewed by the assurance panel. Please note these corridors also include land within the Cumberland Plain Conservation Plan, however the attached map only shows the corridors in relation to land known as Mt Gilead Stage 1 (Figtree Hill), Stage 2 (subject of the assurance panel program) and the adjacent Noorumba and Beulah reserves. These corridors may be further refined or amended as a result of the assurance panel program or any subsequent statutory rezoning process, however, must continue to apply the recommendations and advice of the OCSE.

The Gilead Planning Report and the Biodiversity Certification Assessment Report and Strategy do not include a comparison map of the planning proposal with the DPE Planning corridors. Furthermore, an assessment of consistency with the OCSE Koala reports has not been provided.



Regarding the Koala corridors, the OCSE *Advice on the protection of the Campbelltown Koala population* includes the following advice and recommendations:

- *c) Habitat within identified corridors should be:*
  - *o protected (especially from development creep)*
  - *o widened through revegetation (average size 390 to 425m)*
  - *o include a buffer on either side of the corridor habitat that is at least 30m wide from the corridor to the exclusion fence with feed trees permitted in this buffer area*
  - *o include, between the buffer area and the urban areas, koala proof fencing to prevent the movement of koalas out of the corridor into urban areas (with trees more than 3m from the fencing to avoid damage) and the movement of domestic dogs (amongst other potential threats) into the corridor*
  - *o for sites where exclusion fencing is infeasible due to steep terrain, then additional buffer width should be utilised (buffer ~60m), with a traffic speed limit of 40 km/h and predator / dog monitoring*
  - *o asset protection zone is outside the exclusion fencing, within the development footprint.*
- *The Panel recommends the establishment of exclusion fencing to separate koalas from threats associated with urban development, particularly from dogs and cars.*
- *Buffer zones provide a mechanism to minimise edge effects – they reduce interactions between koalas and the urban environment. The Panel notes that buffer zones should:*
  - *o provide separation between the built environment and other associated infrastructure (including roads).*

The follow up OCSE report *Response to questions about advice provided in the Koala Independent Expert Panel Report 'Advice on the protection of the Campbelltown Koala population'* provides the following comments and advice regarding buffer zones including allowable activities within the zones:

- *Urban development in proximity to fauna has increased the potential 'edge effects' that species such as koalas experience.*
- *Edge effects can include both direct (i.e., vehicle strike and dog attacks) and indirect (i.e., light and noise pollution, urban storm runoff) impacts on fauna and flora, and can result in altered behaviour (for example, changes in home ranges or in how species disperse throughout a landscape) that can have longer term repercussions.*
- *There are a number of strategies and methods that can mitigate the impact on koalas, particularly at the interface of urban and native environments. This includes, but it is not limited to, vegetated buffer zones and managed habitat areas, koala exclusion fencing.*
- *The Mt Gilead Biocertification initially proposed a 30m buffer (15m inner buffer and 15m outer buffer, and included the APZ), however the buffer….. served a dual purpose and contained infrastructure and possible threats to koalas (including roads). The Panel saw the design as ineffective as it permitted threatening activities in close proximity to koalas and koala habitat with no barrier to interaction between koalas and hazards.*
- *The Panel views the buffer as a vegetated protection for koalas and their habitat from direct and indirect threats (i.e., 'edge effects').*
- *The buffer is designed to reduce the impact of direct and indirect impacts from humans, such as light and noise.*
- *Removing habitat from buffer areas should be avoided unless absolutely necessary.*
- *The key tenet is that the primary aim should be to maximise koala habitat and to protect that habitat. Whilst average corridor widths (390m to 425m) have been used, this should be the minimum average to aim for, with "…every opportunity to maintain or increase the width of corridors should be taken…". We have reflected this concept in the figures below (Figure 8). This should not lead to perverse outcomes or be to the detriment of current habitat (i.e., habitat should not be removed from*

the corridor/buffer unless absolutely necessary), but with a revegetated corridor and buffer designed to protect and increase this habitat.

It is important to acknowledge that if these activities should not be included within the buffers, then clearly, they should not be included within the primary Koala corridors.

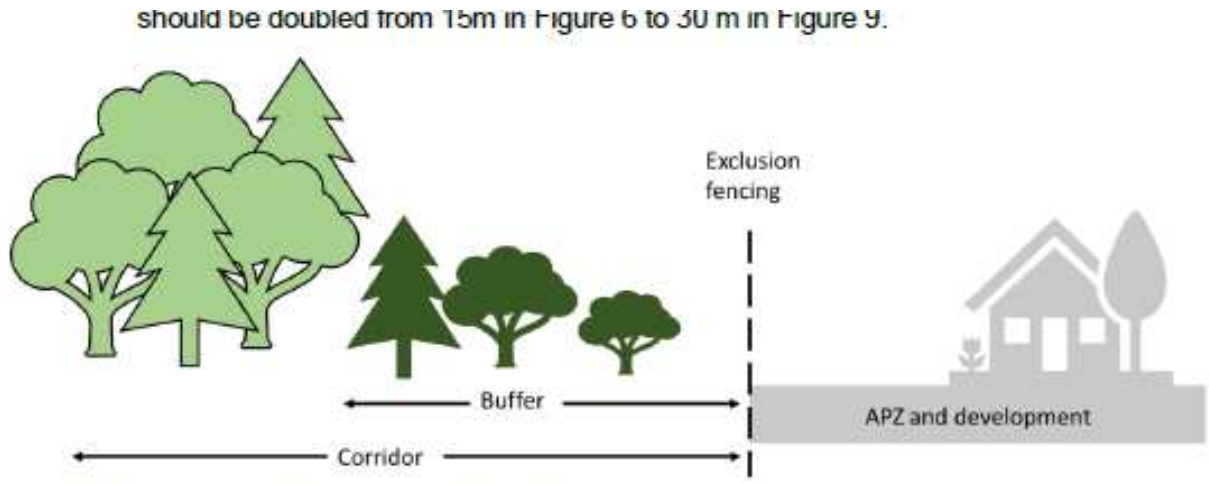


Figure 7: The separation of the vegetated buffer (which can include koala feed and shelter trees, with a bias towards the area adjacent to the corridor) and APZ

OCSE *Response to questions about advice provided in the Koala Independent Expert Panel Report 'Advice on the protection of the Campbelltown Koala population'* Figure 7

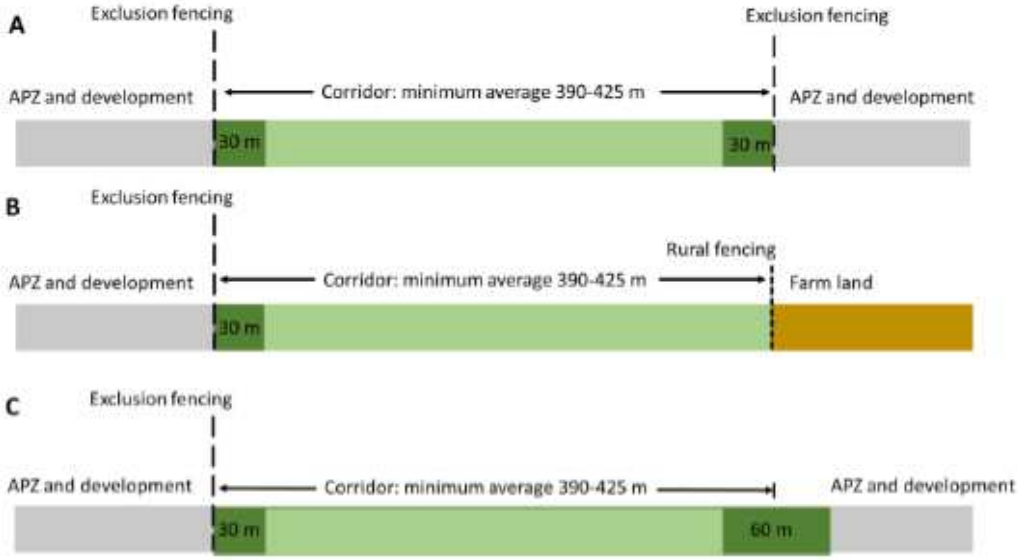


Figure 8: Recommendations for corridors. A) Development either side of the corridor, B) Development on one side and farmland on the other, C) Development on both sides, but with one side unable to be fenced.

OCSE *Response to questions about advice provided in the Koala Independent Expert Panel Report 'Advice on the protection of the Campbelltown Koala population'* figure 8

Table 1: A non-exhaustive list of activities allowed within the various buffer zones

	Exclusion fencing (30 m buffer)	No exclusion fencing (60 m buffer)	Rural fencing on homestead
Members of the public	Acceptable; access via appropriate gates in koala exclusion fencing	Acceptable	N/A
Dogs	No dogs allowed within buffer	No dogs allowed within buffer	Proponent discuss with Homestead management about approach to managing farm dogs to prevent access to corridor.
Roads	No roads within buffer, unless required to cross corridor. Requires appropriate mitigation devices (raised, fenced, cattle grid etc)	No roads within buffer, unless required to cross corridor. Requires appropriate mitigation devices (raised, fenced, cattle grid etc) Reduced speed limits (40km/h) on adjacent roads to buffer with traffic calming devices	In discussion with the Homestead manager, roadways that cross corridors would require appropriate mitigation devices within the corridor (raised, fenced, cattle grid etc)
Playgrounds	No playgrounds within buffer	No playgrounds within buffer	N/A
Picnic Areas	No picnic areas within buffer	No picnic areas within buffer	N/A
Koala feed trees	Koala feed trees should form part of the buffer, ensuring that no large tree is within 3 m of the buffer	Koala feed trees could form part of the vegetation within the 30 m closest to the corridor; noting that there should be minimal koala feed/shelter trees in the outer 30 m (i.e. adjacent to the APZ and development) to discourage koala movement into these areas	N/A

OCSE *Response to questions about advice provided in the Koala Independent Expert Panel Report 'Advice on the protection of the Campbelltown Koala population'* Table 1

In response to the recommendations of the OCSE, the Biodiversity Certification Assessment Report and Strategy includes Figures 4 and 5 (maps 1 and 2 below) which depict several uses of land within the Koala corridors that are inconsistent with the OCSE recommendations including the Riverside Reserve, basins and asset protection zones (APZ).

Regarding the Riverside Reserve, the Biodiversity Certification Assessment Report and Strategy Figure 4 identifies the reserve and its access roads within the Koala corridor as 'Land to be Certified Development – River Park'. The report also refers to the river park as "open space" and states that (p 112*) A one-way access road will link the urban area to this river frontage but will not impact riparian buffers, the area will be fully landscaped with picnic/BBQ areas and car parking.* Based on the advice provided by the OCSE including Table 1 above, the proposed Riverside Reserve including the picnic areas and access roads should not be included within the Nepean River Koala corridor. It is clear that the Riverside Reserve and its access roads are part of the proposed urban development land and not part of 'land to be conserved'. The proposed clearing of Koala habitat to facilitate the reserve and its access roads is therefore not supported by EHG.

The proposed Riverside Reserve and its access roads are also inconsistent with the Gilead Stage 2 Technical Assurance Panel (TAP) advice. In addition, it is not included in the proposed Gilead Biodiversity Stewardship Agreement (BSA) site and therefore is not included in the conservation outcome for the site. It is also important to note that the Cumberland Plain Conservation Plan (CPCP) does not include certified areas for open space and parks within the Koala corridors in the Appin Part Precinct. Therefore, EHG believes the proposal to certify the Riverside Reserve and its access roads within the Koala corridor is inconsistent with the approach to conservation of Koala corridors in the CPCP in the Appin Part Precinct.

Regarding the **proposed basins**, they are required infrastructure to support and facilitate the urban development of the site. In considering the OCSE advice including Figures 7 and 8 above, EHG is of the view that the basins would be considered as 'development' and as such should be located on the development side of the exclusion fence within the development footprint. To further illustrate this point, Figure 4 in the Biodiversity Certification Assessment Report and Strategy identifies the basins as 'Land to be Certified Bio-retention Basin' and therefore part of the development area and not part of the 'Land to be Conserved'. Furthermore, Table 1 states *Land proposed for Biodiversity Certification (Urban development and associated infrastructure - roads, bio-detention basins, APZs)* while Section 5.2.4 states *Stormwater runoff from urban areas will first be treated in off-line bio-retention basins before being discharged to the streams……. These bio-detention basins are all located outside of the riparian buffers and within the urban footprint.*

It appears that the basins will also result in the removal of habitat within Koala corridors, which is not supported by EHG, and there will be ongoing impacts associated with maintenance of the basins. The basins in the Koala corridors are also excluded from the proposed Gilead BSA site. Furthermore, the CPCP does not include certified areas for basins within Koala corridors in the Appin Part Precinct. Therefore, EHG believes the proposal to certify basins within the Koala corridors is inconsistent with the Koala corridor conservation approach in the CPCP for the Appin Part Precinct.

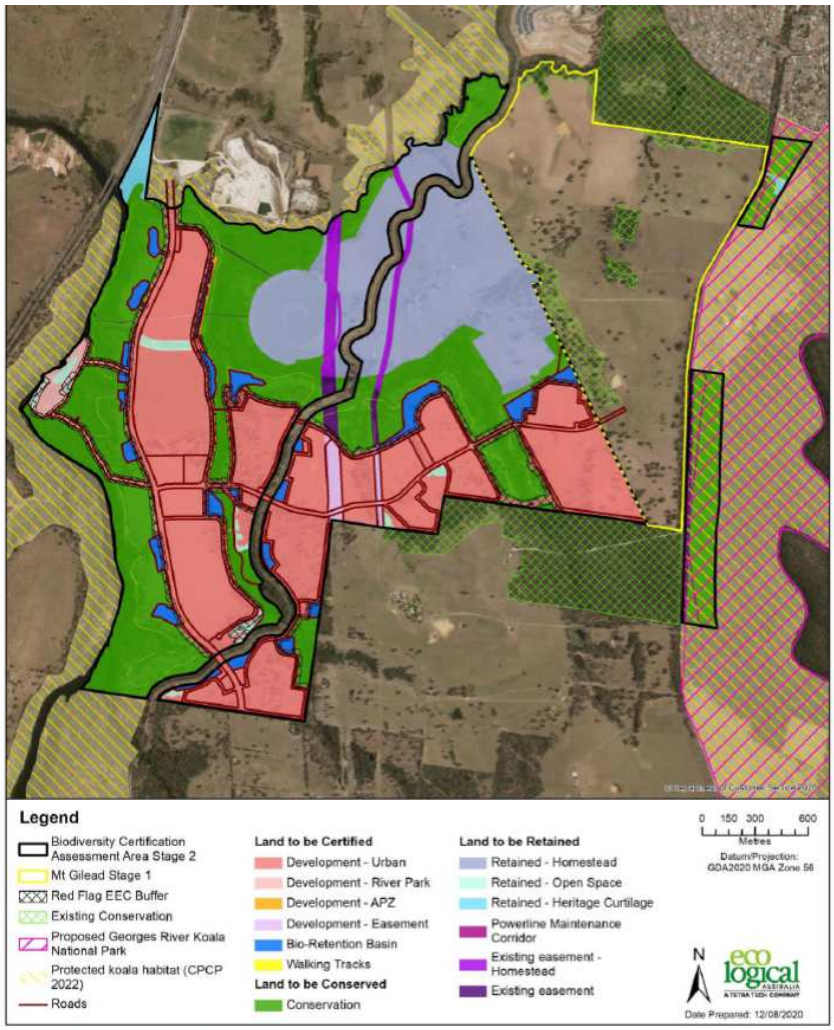


Figure 4: Concept Master Plan

Map 1 – Figure 4 Biodiversity Certification Assessment Report and Strategy

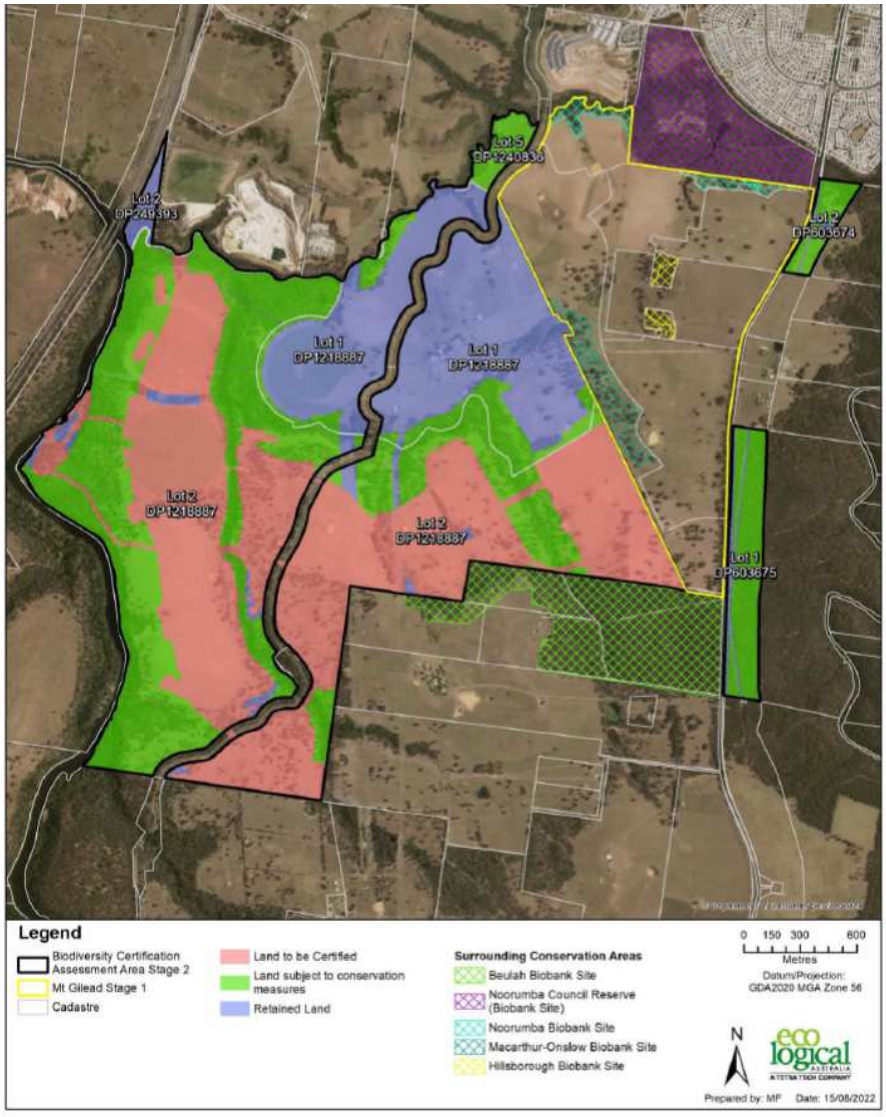


Figure 5: Mt Gilead Biodiversity Certification Assessment proposed land use

Map 2 – Figure 5 Biodiversity Certification Assessment Report and Strategy

EHG raises concerns that the **Koala corridor boundaries and location of buffers** as per the OCSE requirements have not been identified on maps. EHG notes there are areas where the corridor boundary line cuts off existing Koala habitat resulting in part of the existing habitat being located within the Land to Certified. As stated by the OSCE:

The key tenet is that the primary aim should be to maximise koala habitat and to protect that habitat. Whilst average corridor widths (390m to 425m) have been used, this should be the minimum average to aim for, with "…every opportunity to maintain or increase the width of corridors should be taken…". We have reflected this concept in the figures below (Figure 8). This should not lead to perverse outcomes or be to the detriment of current habitat (i.e., habitat should not be removed from the corridor/buffer unless absolutely necessary), but with a revegetated corridor and buffer designed to protect and increase this habitat.

Therefore, the Koala corridor boundaries should be revised to ensure that existing habitat that forms part of the corridor is conserved and not severed/cleared through their inclusion in the

proposed certified area. The Biodiversity Certification Assessment Report and Strategy maps should also include the corridor width measurements and the location of the buffers as recommended by the OCSE.

Regarding **APZs**, as depicted in Figures 4 and 16 (see excerpts below), it appears that part of the APZ is located within the Koala corridor and is identified as 'Land to be Certified Development-APZ' which is inconsistent with the OCSE recommendations and not supported by EHG.

Figure 16

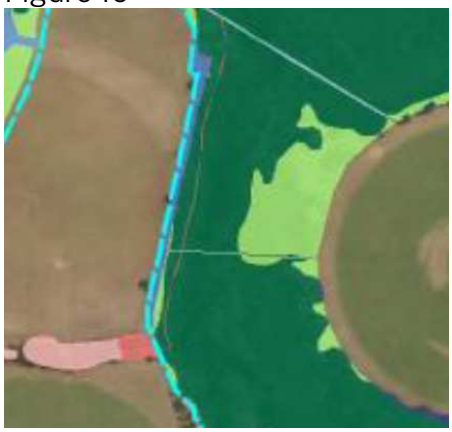
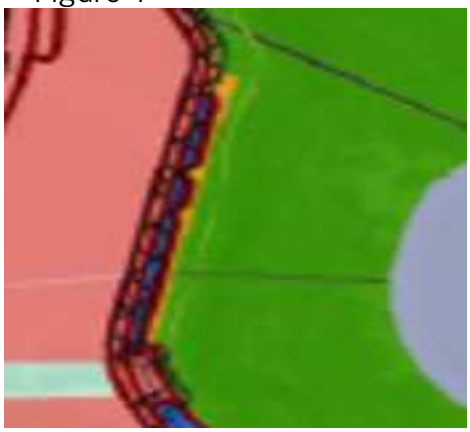


Figure 4



EHG notes there are additional areas of land within the Woodhouse Creek Koala corridor adjoining Beulah BSA that are proposed as 'Land to be Certified Development - Urban' and in which Koala habitat will be impacted (see below excerpt). The proposed certification of this land within the Koala corridor is not supported. As recommended by the OCSE, *Habitat within identified corridors should be protected (especially from development creep).*

The proposal to certify and impact Koala habitat to construct a 1.5m wide walking path within the Koala corridors is also not supported as the path has not been located to avoid impacts to Koala habitat. Any tracks/paths within the Koala corridors must be designed and located to avoid impacts to existing Koala habitat.

In summary:

- EHG does not support the proposed certification (i.e., 'Land to be certified') of the Riverside Reserve (and its access roads), basins and APZs within the Koala corridors. These uses are inconsistent with the OCSE recommendations and will significantly reduce the width and function of the corridors, in addition to the area available for revegetation. The free passage

for Koalas through the corridor will be undermined by the proposed infrastructure, roads and open space which support the development, not Koala conservation.

- EHG also does not support the proposed certification of the paths/tracks within the Koala corridors. Such paths/tracks must be designed and located to avoid impacts to existing Koala habitat in the corridors.
- As discussed above, the Koala corridor boundaries should be refined and the location of the buffers depicted on maps, as per the OCSE requirements. Maps should also show Koala corridor width measurements (consistent with the OCSE requirements) and allow for a comparison with the DPE Planning Koala corridor map.
- The Biodiversity Certification Assessment Report and Strategy should include an assessment of consistency with the OCSE recommendations and requirements.
- In the absence of the BCAM calculator data and shapefiles it is not possible to determine the exact extent of the impacts and provide detailed advice. EHG therefore requires a revised application which addresses the issues raised in this submission and includes the BCAM calculator data and shapefiles, to undertake a detailed review and to provide further comments.

Upper Canal

The Biodiversity Certification Assessment Report and Strategy does not address how Koala connectivity across the Upper Canal is being addressed with WaterNSW. EHG understands that parts of the canal have been fenced by WaterNSW and that as part of future development further fencing will be required. Ensuring the movement of koalas through the corridors is vital and should be addressed as part of the planning proposal and associated Biodiversity Certification Assessment Report and Strategy.

Avoidance of impacts to biodiversity values

During the TAP process, EHG consistently advised that the site contains high biodiversity values in addition to Koala habitat that must be considered as part of the conservation outcomes across the site including:

- Cumberland Plain Woodland (CPW) which is a listed critically endangered ecological community (CEEC)
- Shale Sandstone Transition Forest (SSTF) which is a listed CEEC
- River-Flat Eucalypt Forest (RFEF) which is a listed EEC
- threatened species habitat including habitat for Squirrel Glider, Cumberland Plain Land Snail, Southern Myotis and *Pomaderris brunnea.*

Tables 10 and 12 show that, of the total area of land proposed for certification, 53.5ha is native vegetation, with 76.7% of this (41.06ha) being in low condition. Vegetation zone 15 (SSTF pasture improved) makes up 71.6% (29.39ha) of this low condition vegetation. However, the condition of this zone raises questions because Table 9 shows it to have a site value score of 33 and to be in moderate to good condition, and this score is just under the threshold (of ≥ 34) for determining red flag areas for EECs and CEECs. Vegetation zones 3, 5 and 9 also have site values scores (32 and 33) which are just below this value. As such, it is not immediately clear if most of the native vegetation proposed for certification is in low condition and has been appropriately identified as red flag areas.

Figure 14 shows that vegetation zone 15 (SSTF improved pasture) is contiguous with the riparian vegetation of both Woodhouse Creek and Nepean Creek, to the south and east of their juncture. This zone also provides connectivity for native vegetation associated with Nepean Creek and the Nepean River koala corridor (in the far south of the Biodiversity Certification Assessment Area (BCAA), along the north western side of the canal). Towards the centre of the BCAA, this zone provides key

connections between the riparian vegetation of Woodhouse Creek, southwards to vegetation on an adjacent property that forms the BSA site, Beulah Reserve. The strong connectivity function for this vegetation zone is also reflected in Figure 23.

A comparison of Figures 14, 16 and 17 shows vegetation zone 15 (SSTF improved pasture) makes up a very large proportion of proposed impacts to Squirrel Glider and Koala habitat. Similarly, Figures 14, 18 and 19 show a large area of proposed impacts to Cumberland Plain Land Snail and Southern Myotis habitat is comprised of this vegetation zone.

Protecting further vegetation comprising zone 15 particularly in the area south of the junction of Nepean and Woodhouse Creeks would help to reduce impacts to the Koala, Squirrel Glider, Cumberland Plain Land Snail and the Southern Myotis. It will also help further protect indigenous heritage located in this area and preserve the existing cultural heritage setting of the Upper Canal. Such an approach would also contribute to the widening of the proposed Nepean Creek Corridor which will help to manage the impacts of edge effects.

Figure 12 shows a very large number of hollow bearing trees across the BCAA. There are also likely to be stags and other tree-related habitat features, including fissured bark i.e., Narrow-leaved Ironbark and Broad-leaved Ironbark, which are the dominant canopy species for SSTF. Given these abundant habitat features, along with others such as creeks and drainage lines, and a diversity of vegetation types, it is understandable that 68 birds (two threatened and one migratory species), 17 microbats (including eight threatened species) and 11 terrestrial and arboreal mammals (including two threatened species), were among others recorded in the BCAA by ELA ecologists, with a further six bird species also being listed on page 52 as being recorded within the BCAA by others.

There are inconsistencies in the Biodiversity Certification Assessment Report and Strategy in relation to the number of *Pomaderris brunnea* being impacted for example Section 2.2.2 on page 22 of the report advises that six individuals will be impacted five within APZ's. Whilst other sections of the report (i.e., Section 4.5, Table 17 and S5.2) advises that only two plants are being impacted. In addition, to the two plants identified as being impacted on Figure 21 the proposed road into the Riverside Reserve is also in very close proximity to *P. brunnea* records. Further information is required to demonstrate that there will be no impacts to *P. brunnea* in these areas. Either way the proposed road runs through an area identified as *P. brunnea* habitat in Figure 15.

With the above points in mind, the following comment on page 95 is noted: *The Master Plan shown in Figure 4 has been developed through numerous iterations to avoid the higher quality vegetation/red flag areas and retain and enhance wildlife corridors, in particular for Koala and Squirrel Glider*. While the protection and conservation of habitat for certain species can also provide habitat for a range of other species, it is still important that this planning process considers the great diversity of species for which the BCAA currently provides habitat.

Given the above concerns with the assessment of biodiversity values, EHG considers that insufficient information has been provided to support the proposed zone boundaries and structure plan including the extent of the proposed urban development zone and land proposed for certification, and the clearing of 53.5ha of native vegetation and threatened species habitat which includes critically endangered and EECs. To undertake a detailed review and to provide further comments, EHG requires a revised biodiversity certification application which addresses the issues raised in this submission and includes the BCAM calculator data and shapefiles.

It is also important to note that further impacts to red flag vegetation should be avoided. This will be easily achieved via the incorporation of additional red flag areas into existing proposed conservation areas noting that most proposed red flag impacts are immediately adjacent to these areas. Such an approach is also in keeping with OCSE recommendation that *…every opportunity to maintain or increase the width of corridors should be taken…". We have reflected this concept in the figures below (Figure 8). This should not lead to perverse outcomes or be to the detriment of current habitat (i.e., habitat should not be removed from the corridor/buffer unless absolutely necessary).* Such an approach will also reduce impacts to various red flag entities and other threatened and non-threatened entities within the BCAA.

Retained land

The Biodiversity Certification Assessment Report and Strategy identifies retained land as land excluded from the assessment including Mt Gilead Homestead lands, Open Space, Heritage Curtilage and Existing Easements. However, the land use zone map shows these areas as being zoned urban development except for the Mt Gilead Homestead lands.

EHG raises concern as the retained open space areas only comprise existing areas of native vegetation (including red flag and non-red flag vegetation) which are proposed to be zoned urban development. As indicated above, EHG requires a revised application (including the BCAM calculator data and shapefiles) to undertake a detailed review and will provide further comments on retained land areas.

Indicative Transport Corridor- Koala Corridor A

The Biodiversity Certification Assessment Report and Strategy proposes to certify land within the Koala corridor at Menangle Creek for a road corridor. However, the location of the road corridor crossing is inconsistent with the location of the road corridors (including the indicative transport corridor) in Greater Macarthur 2040 November 2022 update and therefore should be removed from the area proposed to be certified.

State Environmental Planning Policy (Precincts – Western Parkland City) 2021 Amendments (Appendices S and T)

While the DPE Planning TAP letter stipulates permitted uses in the C2 land should include flood mitigation works, as indicated above EHG does not consider basins within the Koala corridors to be consistent with the OCSE recommendation. EHG therefore does not support the proposal to certify land for the basins within the Koala corridors.

The Gilead Planning Report indicates that outside of the land identified on the zoning map as 'C2 Environmental Conservation (with Koala Corridor)', additional permitted uses within the C2 zone (identified as 'Environmental Conservation (Additional Permitted Use))' are proposed. The proposed additional uses are set out in Schedule 1 of Appendix S and generally apply to the Nepean Creek riparian corridor and the proposed BSA sites east of Appin Road. Given that the land east of Appin Road is proposed to be included in a BSA, is identified as Strategic Conservation Area under the CPCP and forms part of the Georges River Koala Corridor, it is unclear why the C2 zone with additional uses applies to these areas. It is also noted that Figure 4 of the Biodiversity Certification Assessment Report and Strategy identifies the BSA sites east of Appin Road as part of the 'Proposed Georges River Koala National Park'. EHG considers that the C2 additional permitted uses should not apply to the BSAs and Koala corridors east of Appin Road.

It is also unclear why the additional permitted uses apply to the Nepean Creek riparian corridor given the biodiversity values present.

As detailed above, EHG considers that insufficient information has been provided to support the proposed zone boundaries and structure plan including the extent of the proposed urban development zone and land proposed for certification, and the clearing of 53.5ha of native vegetation and threatened species habitat which includes critically endangered and EECs. Once EHG has reviewed a revised biodiversity certification application, further comments will be provided.

Flood risk management

The Stormwater Management Strategy and appended Flood Assessment only includes an analysis of pre-development flooding. Modelling of post-development conditions is also required. This includes flows under post-development conditions, noting that these will be different to pre-developed conditions even with the implementation of basins.

The hydraulic modelling has assumed unrealistically low tailwater conditions in the Nepean River. While a joint probability analysis is not suggested or required, further consideration should be given to an appropriate tailwater level for each of the storm events modelled.

Consideration of Nepean River flooding must include all available sources of information. The Draft Wollondilly Shire Flood Study Broad Scale Assessment Figures C.01 and D0.3 appear to indicate greater extents of flooding for the site than what is shown in the Flood Assessment. Consultation with Wollondilly Shire Council is recommended to obtain the flood information for the full range of flooding.

Discussion of flood emergency management is required. This should include a preliminary assessment of the flood emergency classification of communities on a precinct scale. Care should be taken not to unintentionally create areas that become isolated in flood events, even where they remain elevated above floodwater (high flood islands). To this end, any bridges that should be above the PMF level should be identified at this stage in the planning process. The reports note that bridges are likely to be above the PMF. However, where this is required flood emergency management purposes, this must be explicitly stated. The potential for the southwestern corner to become isolated should also be considered. Consultation with the SES should also be undertaken.

There appears to be an existing dam on Nepean Creek, south of its confluence with Woodhouse Creek. The flood modelling includes this dam. Reporting must state whether or not this existing dam will be removed. If it is to be removed, flood modelling should be updated to show these post development conditions. This dam appears to have a significant effect on flood behaviour. There may be other dams that also affect flood behaviour, which should be detailed in the Flood Assessment.

A geomorphological impact assessment should be prepared for any basins proposed to be located within the 1% AEP flood extents. The assessment should consider the impact of the basin on the geomorphology of its surrounds and also indicate the potential for scour impacts on the basin.

Due to the steep slopes across the site, the required batters surrounding basins may be very large. The engineering report made an allowance for batters of just 50% of the water surface area for each basin. EHG does not consider this a sufficient level of detail for this stage. The footprints of basins must be properly estimated so that the required land take is documented. Otherwise required infrastructure and development areas will be jeopardised.

Any preliminary information on the proposed transit corridor must be shown because the corridor may cause isolation of communities in floods and therefore impacts emergency management.

Finally, the stream erosion index has been calculated for some catchments. This should also be calculated for catchments draining to flumes across the upper canal. Maintaining flow and velocity at existing rates would not be sufficient. If the velocity is maintained, but the duration of inundation increases, the risk of scour would also increase.

A flood impact and risk assessment is required, including:

- Outline existing flood behaviour, compatible with existing information.
- Identify developed conditions flood behaviour. The developed scenario should include the proposed development with key details of the final proposal, including development type and density changing runoff characteristics, infrastructure and proposed modification to waterways or floodplain landform or vegetation.
- Identify the impacts of the proposed development on the flood behaviour and on flood risk to the existing community
- Identify the impacts and risks of flooding on the development and its users.
- Identify how these impacts can be managed to minimise the growth in risk to the community due to the development. This includes details of any management measures to be implemented to minimise the impacts and risks posed to the existing and future community due to development.
- Provide an assessment of the residual impacts of the project (that management measures cannot manage) on and off the site.

END OF SUBMISSION