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19 April 2024

[redacted]

City of Gosnells

2120 Albany Hwy Gosnells WA 6990

Dear [redacted],

Please find attached a letter report outlining Biologic's response to public and government submissions to the Environmental Protection Authority in regard to the City of Gosnells Garden St Extension project (Assessment No. 2357).

Yours sincerely,

[redacted]

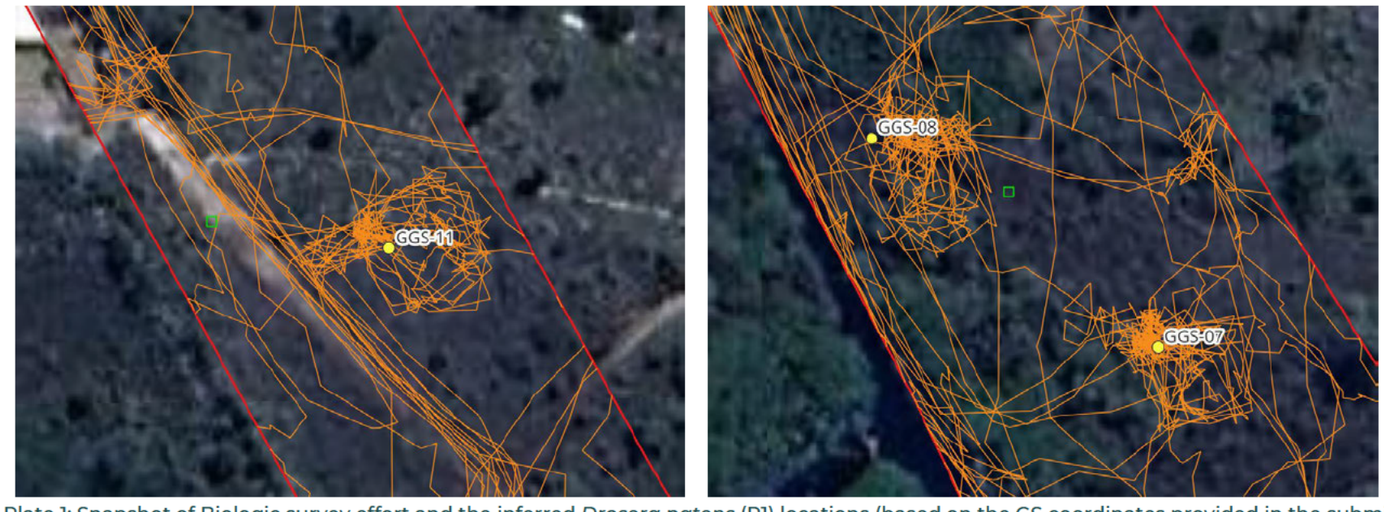
1 Background

City of Gosnells (the "City") is proposing to extend Garden Street between Harpenden Street and Balfour Street in Southern River (the "Study Area"). The extension of Garden Street is located within remnant native vegetation, including wetlands. Biologic conducted a two-phase detailed and targeted flora and vegetation survey within the Study Area in spring 2020 (Biologic, 2022). The project has since been referred to the EPA for assessment (Assessment No. 2357). The City has requested that Biologic respond to four submissions from the public and government agencies on the Garden Street extension referral. These comments all relate to environmental factor 'Flora and Vegetation' under the *Environmental Protection Act 1986* (EP Act).

2 Response to Flora and Vegetation Submissions

The Garden Street Extension Southern River referral – Assessment No. 2357, received several submissions from the Public and Government regulators. The submissions relate to a broad set of concerns and queries, however, only four submissions relate to flora and vegetation. Biologic has provided a response to each of the four submissions below in Table 1.

Table 1: Submissions and Biologic response

Submission No.	Submission	Biologic Response
2 ANON-QTYN-1C8R- A	The proposal has the potential to result in the loss of two populations of the *Drosera patens* (Droseraceae). This species was not detected during any of the provided flora and vegetation. The surrounding habitat was extensively surveyed in both 2020 and 2023, with few additional plants were encountered outside of the development envelope The species *Drosera patens* (Priority 1) carpeting the ground within the Garden Street Extension development envelope has been recorded at two locations (>50 individual plants) on 4 October 2020, 15 October 2023 and 9 December 2023. It is recommended that a detailed assessment is undertaken to assess the impacts of the proposal on *Drosera patens*.	A two-phase detailed flora and vegetation survey (phase 1 in early spring - September, and phase 2 in late spring - November) was undertaken in 2020 (Biologic, 2022), which was consistent with EPA guidelines for flora and vegetation surveys in south-west Western Australia (EPA, 2016). The survey was undertaken following numerous other flora and vegetation surveys (360 Environmental, 2014; Natural Area, 2016; PGV, 2016, 2018; Woodman, 2004) in the past across the Garden Street extension and greater Garden Street reserve: • October 2003 (Woodman, 2004); • August & September 2014 (360 Environmental, 2014); • October 2015 (Natural Area, 2016); • September 2016 (PGV, 2016); and • November & December 2017, January 2018 (PGV, 2018). A detailed and targeted flora and vegetation survey is designed to capture most of the flora, including significant flora. It is not always feasible to be sampling multiple times across multiple years, while survey timing can be impacted by prevailing weather patterns. Given the high number of significant flora present within the Swan Coastal Plain bioregion the desktop search radius for the Study Area was set as 5 km. The desktop and database searches did not return a record for *Drosera patens* (P1) and thus was not on the list of significant flora with potential to occur within the Study Area. The desktop assessment is designed to narrow down the potential flora that may occur and to focus on significant flora that are Highly Likely, Likely, or Possible to occur. Survey personnel endeavour to record all taxa seen during the survey, whether or not they were on the significant flora list. But there is always potential that some taxa are not recorded, especially small cryptic taxa like *Drosera patens*. The Western Australian Herbarium currently has eight specimen records for *Drosera patens*, with the nearest record located in the suburb of Canning Vale from 1965 (WAH, 1998 -). There is no specimen held by the WAH (or as a TPFL record) from the populations purported to be in the Study Area, and they are thus unconfirmed. *Drosera patens* has been recorded flowering from late November to January (WAH, 1998 -). Biologic conducted the phase 2 survey on 10th and 11th of November 2020, which was approximately one month after the first documented sighting from the anonymous submission (4 October 2020). Although this was slightly early for flowering, the basal leaf rosettes would have been observable, especially if they were carpeting the ground as suggested in the submission. However, Biologic did not observe any pygmy *Drosera* species, nor did any of the previous surveys. A review of the GPS coordinates provided in the submission suggests the plants are located within a couple of metres of traverses completed by Biologic botanists, while the south-east corner of quadrat GGS-08 is within 10 m of the coordinate provided. As such, survey effort is not considered a factor in the potential omission of the priority *Drosera*. Plate 1 below shows Biologic's survey effort (quadrats and traverses) and the location of *Drosera patens* (green square) based on the coordinate provided in the submission.  Plate 1: Snapshot of Biologic survey effort and the inferred *Drosera patens* (P1) locations (based on the GS coordinates provided in the submission)

Submission No.	Submission	Biologic Response
3 ANON-QTYN-1C8R- A	The proposal has the potential to result in the destruction of critical habitat for *Byblis gigantea* (Byblidaceae). Typical *B. gigantea* habitat comprises *Pericalymma ellipticum* heathland around the margins of winter-wet swamps and depressions, often near the bases of sand-dominated rises and dunes. This precise habitat type is present in the development envelope and the likelihood of *B. gigantea* occurring there has been assessed as high during the three above-mentioned site visits. *Byblis gigantea* likely grows as a fire-ephemeral species in the SCP (Cross *et al.*, 2013) and populations may thus only comprise a dormant soil seedbank in the prolonged absence of fire. No fire is known to have affected the development envelope for at least 20 years, and this may explain the current absence of growing *B. gigantea* individuals from this suitable habitat. Minimising the clearing of *Pericalymma ellipticum* wetlands, even if surveys fail to detect any individuals, has been identified as a key management recommendation in the Threatened nomination for *Byblis gigantea*.	*Byblis gigantea* (P3) is a perennial subshrub which regenerates each year from a subterranean rhizome (Conran *et al.*, 2002; WAH, 1998 -). Although *B. gigantea* seems to respond readily to fire through germination and mass recruitment of seedlings, it is also noted that mature individuals are present between fires and can persist for several years after fire by regenerating from the rootstock/ subterranean rhizome (Conran *et al.*, 2002; Cross *et al.*, 2013). *B. gigantea* is classed by Cross *et al.* (2013) as a facultative sprouter–seeder, meaning it uses both resprouting and germination as a post-fire survival strategy. The Study Area has been surveyed multiple times over the last 20 years, mostly within the flowering period for *B. gigantea* (September to January) (360 Environmental, 2014; Biologic, 2022; Natural Area, 2016; PGV, 2016, 2018; Woodman, 2004). The earliest survey was in 2003 (Woodman, 2004), with no reported fires between the 2003 survey and Biologic's 2020 surveys. A review of historical aerial imagery suggests that the last fire is greater than 20 years ago and potentially closer to 30 or 40 years. *Byblis gigantea* seeds exhibit non-deep physiological dormancy, which is alleviated by warm stratification with germination then stimulated by smoke (Baskin & Baskin, 2004; Cross *et al.*, 2013). There is anecdotal evidence of *B. gigantea* seeds still germinating after being stored in a refrigerator for 22 years (Ziemer, 2012). Longevity of *B. gigantea* seeds in the topsoil seedbank, however, is not known. If *B. gigantea* was present within the Study Area, it is difficult to know whether its seeds would have persisted between fires i.e., up to 40 years, or whether they have deteriorated and are unlikely to germinate following a fire. *Byblis gigantea* was assessed as Possible to occur prior to the field survey (Biologic, 2022). After the survey, this likelihood was downgraded to Unlikely, due to intensive searching within the Study Area by Biologic and previous surveys, and suitable habitat being limited (i.e., only within the wetland vegetation types). We do not dispute that suitable habitat is present within the development envelope, however, it is likely that suitable habitat also extends outside of the development envelope, consistent with the wetland community. If *Byblis gigantea* was present and observable (i.e., had germinated or regenerated from the rootstock with aboveground leaves and stems present) at the time of the field surveys, it is unlikely that it would have been missed, as it is very unique and distinctive and would have been of interest to the field teams. As such, its likelihood of occurrence remains Unlikely.
4 ANON-QTYN-1C81- 9	Not all species present within the development envelope have been recorded in the flora list which does not reflect the true representation of the richness and diversity of vegetation present in the development envelope. For example, Christmas tree (*Nuytsia floribunda*), Marri (*Corymbia calophylla*), Jarrah (*Eucalyptus marginata*), Western Sheoak (*Allocasuarina fraseriana*), Grey Stinkwood (*Jacksonia furcellata*); Angled lobelia (*Lobelia alata*), Holly-leaved banksia (*Banksia ilicifolia*), Dwarf sheoak (*Allocasuarina humilis*), ouched Persoonia (*Persoonia saccata*), Marsh Honey Myrtle (*Melaleuca teretifolia*), Robin Redbreast Bush (*Melaleuca lateritia*), Mohan (*Melaleuca viminea*), Variable-leaved Hakea (*Hakea varia*), Twisted lily (*Arnocrinum preissii*), *Calothamnus lateralis*, *Platysace filiformis*, *Pultenaea reticulata*, Foxtail mulga grass (*Neurachne alopecuroidea*) are present and have not been recorded.	Thirteen of the 18 flora taxa mentioned by this submission were recorded and are present in the flora list and also in the sites appendix: *Nuytsia floribunda*, *Corymbia calophylla*, *Eucalyptus marginata*, *Allocasuarina fraseriana*, *Allocasuarina humilis*, *Banksia ilicifolia*, *Persoonia saccata*, *Melaleuca teretifolia*, *Melaleuca lateritia*, *Hakea varia*, *Arnocrinum preissii*, *Calothamnus lateralis* var. *lateralis*, and *Neurachne alopecuroidea* (see Appendix I and Appendix J in Biologic, 2022). *Lobelia alata* is a taxonomic synonym of *Lobelia anceps*, which is detailed on Florabase (WAH, 1998 -). *Lobelia anceps* was recorded by Biologic in the Study Area and is present in the flora list (Biologic, 2022). Survey personnel completed thorough traverses of the Study Area and endeavoured to record all taxa encountered during the survey, as seen by the many opportunistic observations in-between site sampling (quadrats and relevés) (see Figure 3.4 in Biologic, 2022). Threatened and Priority flora with potential to occur within the Study Area were specifically targeted and searched for, in line with EPA (2016) guidance. However, sampling of a survey area does not mean a completely exhaustive list of taxa will be recorded, and there is always potential that some flora are not recorded. The species accumulation curve for the Study Area shows that few new species were recorded after the first couple of quadrats, with the curve plateauing (see Figure 4.3 in Biologic, 2022). Richness estimates indicate that up to 92% of flora present within the Study Area were recorded by Biologic (2022), indicating that the majority of flora taxa were observed and recorded. This is considered to be adequate and in line with EPA (2016) guidance.

Submission No.	Submission	Biologic Response
5 Department of Biodiversity Conservations and Attractions (DBCA)	Regarding data for quadrats in potential areas of the Claypans of the Swan Coastal Plain TEC, data analysis. Further information has been provided however, did provide some of the requested statistical analysis results, and it does not address matters raised in previous advice. It was advised that data for quadrats in potential areas of the Claypan TEC should be analysed against the floristic data from Gibson *et al.* (2005) ('Threatened plant communities of Western Australia. 2. The seasonal clay-based wetland communities of the South West') to determine if the Claypans with mid dense shrublands of *Melaleuca lateritia* over herbs (a component of the Critically Endangered Claypans of the Swan Coastal Plain EPBC listed TEC) is present. The Gibson *et al.* (2005) was not used in the analysis and although some results were provided (dendrograms), similarity testing results were not provided as recommended. In addition, the low species richness, which was acknowledged as likely due to below average rainfall prior to the survey, could be influencing the accurate floristic community type (FCT) assessment. This is particularly relevant when assessing claypan communities, which contain large numbers of herbs. To assist in confirming the development envelope's FCTs it is recommended that the quadrats are rescored to reduce the risk that climatic conditions may influence the results and conclusions.	Quadrats in the two wetland vegetation types Mep Rc (GGS-06, GGS-11) and Mep Ls (GGS-07, GGS-08) have been statistically analysed against the regional dataset from Gibson *et al.* (2005), to determine if 'Claypans with mid dense shrublands of *Melaleuca lateritia* over herbs' is present in the Study Area (listed as a P1 Priority Ecological Community [PEC] at the state level, and is a component of the Claypans of the Swan Coastal Plain [CR] Threatened Ecological Community [TEC] at the Federal level) (Appendix B, Appendix C). This PEC/TEC aligns with Claypans groups 1, 2, and 3, as defined by Gibson *et al.* (2005). This analysis was conducted in accordance with DBCA guidance, with quadrats being analysed as single-site insertions to minimise disruption to the original dataset groupings (DBCA, 2023; English & Webb, 2023). None of the wetland quadrats from the Study Area aligned with these claypan groups 1, 2, or 3, nor with any of the six claypan groups recognised by Gibson *et al.* (2005). Dissimilarity values between quadrats and regional sites were all ≥0.85, indicating they are not very similar (Appendix C) (English & Webb, 2023). This can be seen visually in dendrograms, with all of the Study Area quadrats sitting outside of the Gibson *et al.* (2005) groupings (Appendix B,). Floristic Community Type (FCT) analysis for the wetland quadrats was conducted by Biologic (2022) to determine whether they aligned with sub-communities under the Claypans of the Swan Coastal Plain TEC (FCT07, FCT08, FCT09, FCT10a). Dissimilarity values for the FCT analysis using the Keighery *et al.* (2012) Swan Coastal Plain dataset are provided in Appendix D. Dissimilarity values between the quadrats and claypan TEC sites (FCT07, FCT08, FCT09, FCT10a) are all ≥0.84, indicating that they are not very similar. Dissimilarity values reveal that the wetland vegetation was most similar to a number of different SCP communities, none of which align with any PECs or TECs: • GGS-06 was most similar to FCT04 (dissimilarity value of 0.65); • GGS-07 was most similar to FCTS02 (dissimilarity value of 0.50); • GGS-08 was most similar to FCTS03 (dissimilarity value of 0.60); • GGS-11 was most similar to FCT04 (dissimilarity value of 0.51); FCT analysis was also conducted by RPS (2018) based on data from a wetland vegetation assessment by PGV (2018). RPS (2018) recognised that none of the quadrats were able to be conclusively assigned to a single FCT, but that they were most closely aligned with FCT12, FCT13, FCTS03, FCT04 and FCT21c. None of these are sub-communities of the Claypans of the Swan Coastal plain TEC. It is true that rainfall preceding the 2020 Biologic survey was lower than the long-term average (LTA) and may explain the limited number of annuals and geophytes that were present. Although a portion of the track running through wetland vegetation was inundated with water during the September 2020 survey, indicating that the vegetation had received recent rainfall, there may not have been sufficient time for annuals to germinate and emerge (Biologic, 2022). However, PGV (2018) also noted very few geophytes or annual flora within the wetland vegetation they surveyed in November, December 2017 and January 2018. Rainfall for the months preceding the PGV (2018) surveys (July to October) was above the LTA (500.2 mm compared with LTA of 429.8 mm) (BoM, 2024). Seasonal conditions would have allowed for germination and growth of annuals and emergence of geophytes. Given that the wetland vegetation within the Study Area has been surveyed multiple times, including in 2017-18 when seasonal conditions were good, it is unlikely that re-scoring quadrats will result in higher species richness for annuals and geophytes.

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Appendix A: Important Note

Biologic Environmental Survey Pty Ltd ("Biologic") has prepared this report for the City of Gosnells ("Client"), in accordance with the Client's specific instructions and solely for the purposes for which it is required by the Client ("Purpose"). This report and its content are only pertinent to the Purpose and any matters, facts or results contained in this report are not to be used for any purpose other than the Purpose.

The information contained in this report is not financial advice and Biologic is not licenced to provide financial advice. The report does not take into account the investment objectives, financial situation or specific investment needs of the Client and should not form the basis of an investment decision by the Client

In preparing this report Biologic has assumed the accuracy and completeness of all the information and documents received or obtained from the Client and all information and documents received or obtained as a result of any request or enquiry made to a government department, authority, government register or database. Biologic has not independently verified any such assumptions.

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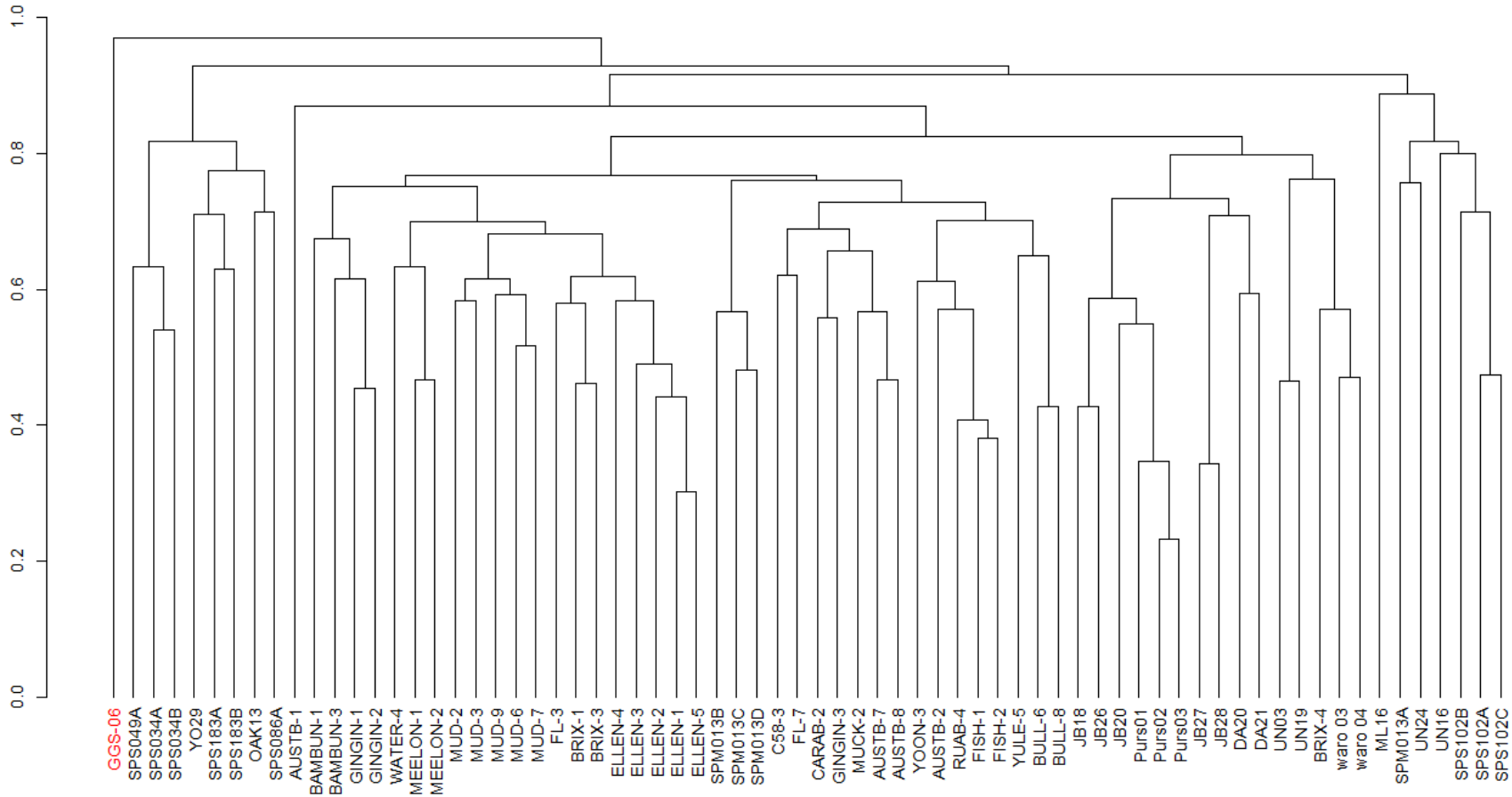
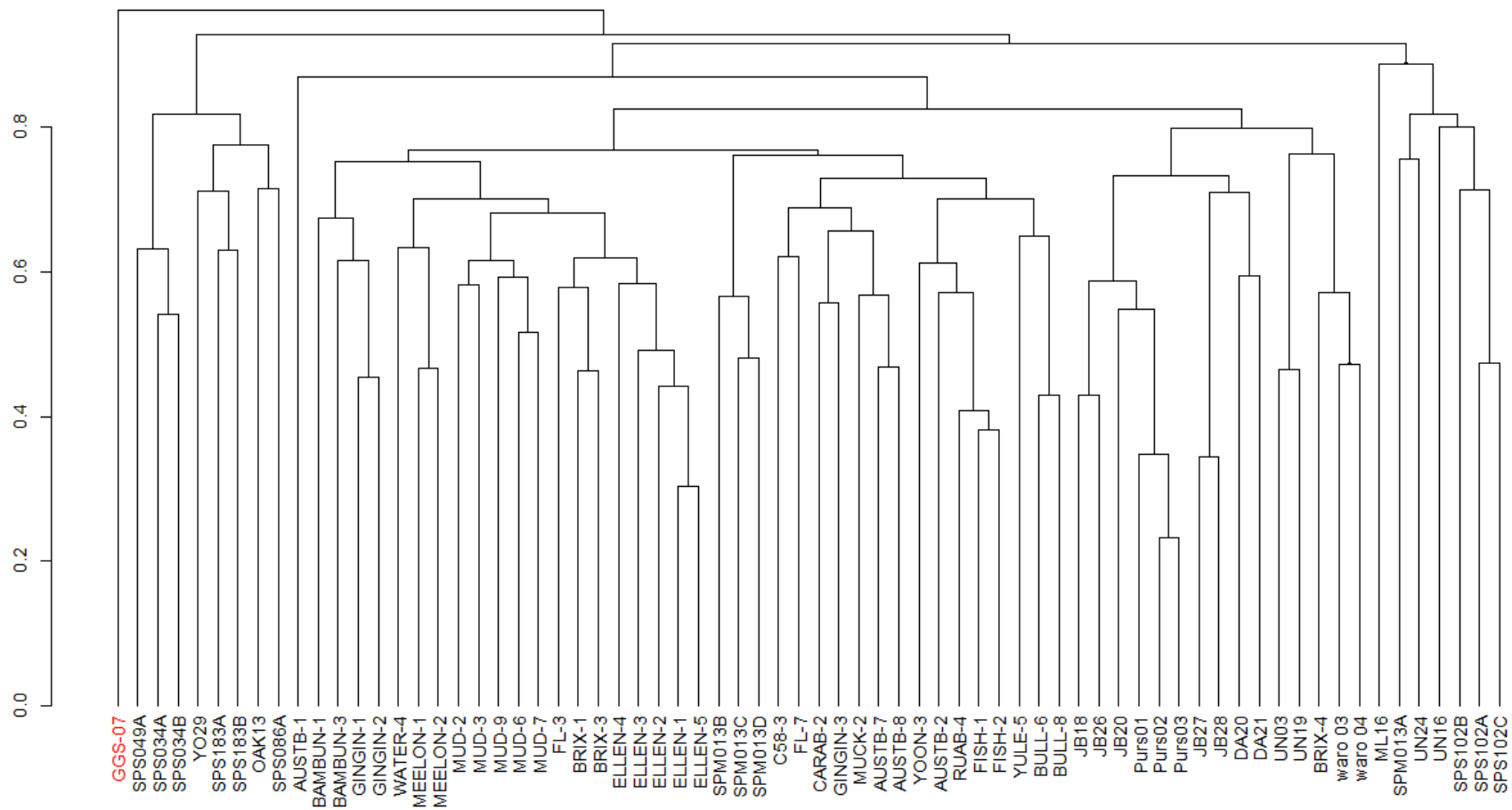
For the purpose of this document, a reference to "Loss" and "Damage" includes past and prospective economic loss, loss of profits, damage to property, injury to any person (including death) costs and expenses incurred in taking measures to prevent, mitigate or rectify any harm, loss of opportunity, legal costs, compensation, interest and any other direct, indirect, consequential, or financial or other loss.

Appendix B: Gibson *et al.* (2005) dendrograms for the Study Area

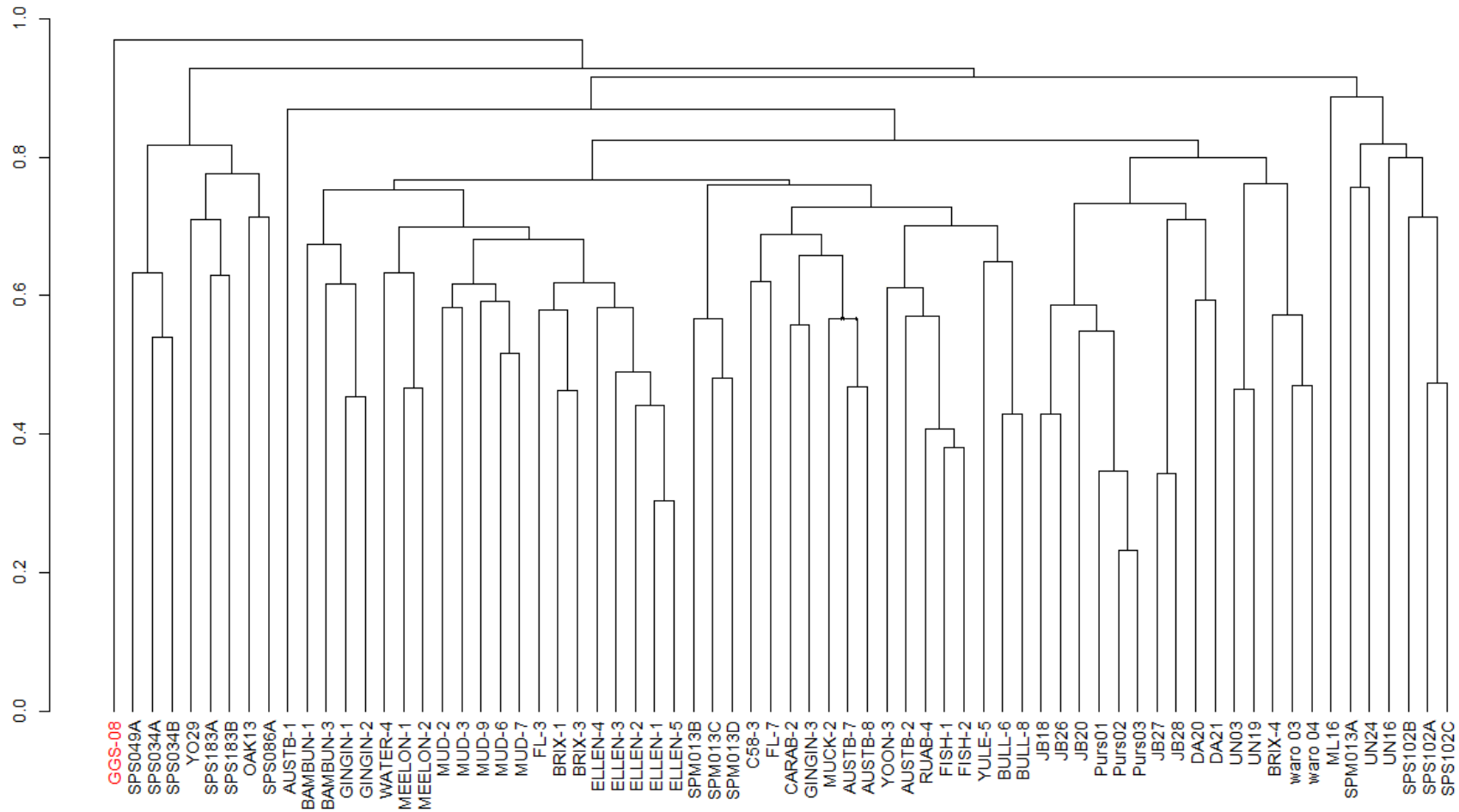
Quadrat GGS-06 (wetland vegetation type Mep Rc). UPGMA method, with presence-absence transformation. Weeds, annuals, and singletons included.



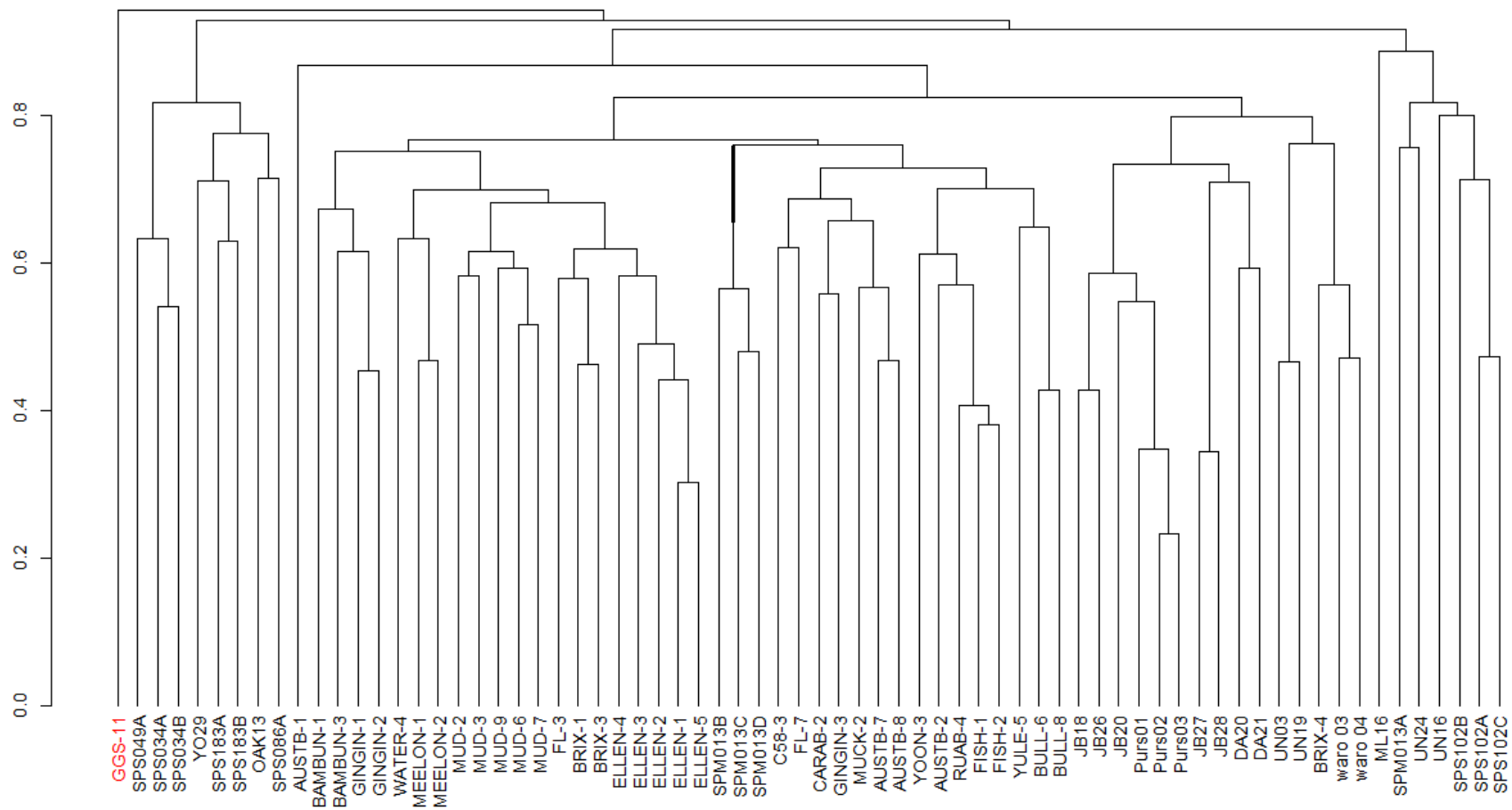
Quadrat GGS-07 (wetland vegetation type Mep Ls). UPGMA method, with presence-absence transformation. Weeds, annuals, and singletons included.



Quadrat GGS-08 (wetland vegetation type Mep Ls). UPGMA method, with presence-absence transformation. Weeds, annuals, and singletons included.



Quadrat GGS-11 (wetland vegetation type Mep Rc). UPGMA method, with presence-absence transformation. Weeds, annuals, and singletons included.



Appendix C: Gibson *et al.* (2005) Dissimilarity Values for the Study Area

Gibson et al (2005) Site	Dissimilarity Values for the Study Area			
	GGS-06	GGS-07	GGS-08	GGS-11
AUSTB-1	1.00	1.00	1.00	1.00
AUSTB-2	0.93	1.00	1.00	1.00
AUSTB-7	0.95	0.95	0.95	0.93
AUSTB-8	0.95	0.88	0.88	0.91
BAMBUN-1	0.94	0.94	0.94	0.90
BAMBUN-3	0.97	0.97	0.97	0.91
BRIX-1	0.94	0.97	0.97	0.89
BRIX-3	0.94	0.94	0.94	0.97
BRIX-4	0.97	0.96	0.93	1.00
BULL-6	1.00	1.00	1.00	0.91
BULL-8	0.97	0.97	0.97	0.97
C58-3	1.00	0.94	0.97	0.95
CARAB-2	0.94	0.88	0.88	0.95
DA20	1.00	1.00	1.00	0.92
DA21	0.96	1.00	1.00	0.97
ELLEN-1	0.97	0.97	0.97	0.94
ELLEN-2	0.97	0.97	1.00	0.92
ELLEN-3	0.94	0.94	0.97	0.86
ELLEN-4	0.96	0.96	0.96	0.90
ELLEN-5	0.94	0.97	0.97	0.88
FISH-1	1.00	1.00	1.00	0.98
FISH-2	1.00	1.00	1.00	0.97
FL-3	0.94	0.94	0.94	0.89
FL-7	0.96	0.96	0.96	0.85
GINGIN-1	0.97	0.92	0.92	0.93
GINGIN-2	0.97	0.93	0.94	0.94
GINGIN-3	1.00	1.00	1.00	0.97
JB18	0.96	0.96	0.96	0.96
JB20	0.97	0.94	0.97	0.97
JB26	0.96	0.96	0.96	0.90
JB27	1.00	1.00	1.00	0.92
JB28	0.96	0.96	0.96	0.93
MEELON-1	0.98	0.96	0.96	0.92
MEELON-2	0.98	0.98	1.00	0.94
ML16	1.00	1.00	1.00	1.00
MUCK-2	0.92	0.92	0.92	0.93

Gibson et al (2005) Site	Dissimilarity Values for the Study Area			
	GGS-06	GGS-07	GGS-08	GGS-11
MUD-2	0.97	0.93	0.97	0.86
MUD-3	0.94	0.91	0.94	0.92
MUD-6	0.95	0.95	0.98	0.87
MUD-7	0.94	0.94	0.94	0.90
MUD-9	0.96	0.94	0.94	0.91
OAK13	0.97	0.97	0.97	0.97
Purs01	0.96	0.91	0.96	0.96
Purs02	0.97	0.93	0.97	0.91
Purs03	0.96	0.92	0.96	0.93
RUAB-4	0.97	0.97	0.97	0.95
SPM013A	1.00	1.00	1.00	1.00
SPM013B	0.97	0.94	0.97	0.89
SPM013C	0.93	0.90	0.93	0.91
SPM013D	0.96	0.92	0.96	0.93
SPS034A	0.95	0.95	0.95	0.91
SPS034B	1.00	1.00	1.00	1.00
SPS049A	0.95	0.94	0.95	0.95
SPS086A	1.00	1.00	1.00	1.00
SPS102A	1.00	1.00	1.00	1.00
SPS102B	1.00	1.00	1.00	0.96
SPS102C	1.00	1.00	1.00	1.00
SPS183A	0.96	0.96	0.96	0.96
SPS183B	0.97	0.97	0.97	0.97
UN03	1.00	1.00	1.00	0.96
UN16	1.00	1.00	1.00	1.00
UN19	0.97	0.97	0.97	0.92
UN24	1.00	0.95	1.00	1.00
waro 03	1.00	1.00	1.00	1.00
waro 04	1.00	0.96	0.96	1.00
WATER-4	0.92	0.92	0.94	0.91
YO29	1.00	1.00	1.00	1.00
YOON-3	1.00	1.00	1.00	0.97
YULE-5	0.92	0.96	0.96	0.93

Appendix D: FCT (Keighery *et al.*, 2012) Dissimilarity Values for the Study Area

Regional Site ID	FCT	Dissimilarity Values for the Study Area			
		GGS-06	GGS-07	GGS-08	GGS-11
activ01	20a	0.89	0.98	0.93	0.92
activ02	20a	0.92	0.96	0.94	0.86
activ03	20a	0.9	0.95	0.95	0.86
APBF-1	20a	0.96	0.96	0.96	0.96
APBF-2	20a	1	1	0.98	0.98
brick1	3a	0.88	0.93	0.9	0.85
brick2	20b	0.95	0.98	0.98	0.85
brick3	3a	0.93	0.93	0.95	0.85
brick4	9 (claypan TEC)	0.95	0.89	0.89	0.96
brick5	3a	0.89	0.84	0.92	0.8
brick6	3a	0.91	0.88	0.94	0.84
brick7	3a	0.97	0.97	0.97	0.87
brick8	3a	0.92	0.95	0.95	0.86
BRIX-1	8 (claypan TEC)	0.94	0.97	0.97	0.86
BRIX-2	3a	0.94	0.94	0.97	0.82
BRIX-3	8 (claypan TEC)	0.94	0.93	0.93	0.97
BRIX-4	8 (claypan TEC)	0.96	0.96	0.92	1
BRIX-5	3a	0.93	0.97	1	0.82
Bushm01	20a	0.86	0.95	0.95	0.87
Bushm02	20c	0.88	1	0.91	0.85
card1	20b	0.95	1	0.98	0.89
card10	6	0.86	0.9	0.9	0.8
card11	6	0.95	0.95	0.9	0.84
card12	3b	0.95	0.94	0.97	0.88
card13	3b	0.88	0.98	0.93	0.87
card2	20b	0.96	1	0.98	0.9
card3	21a	0.91	1	0.97	0.84
card4	6	0.9	0.95	0.95	0.75
card5	20b	0.98	1	1	0.93
card6	20b	1	1	1	0.98
card7	21a	0.9	0.97	0.93	0.88
card8	20b	0.91	0.94	0.94	0.78
card9	20b	0.89	0.91	0.97	0.8
Cresw01	23a	0.87	0.92	0.92	0.83
elbr01	3b	0.94	0.98	0.96	0.83
elbr02	S08	0.95	0.95	0.95	0.96

Regional Site ID	FCT	Dissimilarity Values for the Study Area			
		GGS-06	GGS-07	GGS-08	GGS-11
elbr03	S08	0.92	0.97	0.94	0.82
Ellib01	S08	0.97	0.97	0.97	0.84
Ellib02	20d	0.93	0.96	0.96	0.9
Ellib03	S08	0.93	0.96	0.93	0.88
Ellib04	S08	0.91	0.93	0.9	0.89
Ellib05	S08	0.95	0.97	0.95	0.88
Ellib06	S08	0.93	0.95	0.95	0.84
FL-1	4	0.82	0.9	0.84	0.69
FL-10	12	0.94	0.71	0.86	1
FL-2	10a (claypan TEC)	0.91	0.95	0.91	0.96
FL-3	8 (claypan TEC)	0.94	0.93	0.93	0.86
FL-4	21a	0.84	0.94	0.83	0.75
FL-5	21c	0.86	0.96	0.89	0.78
FL-6	21c	0.86	0.96	0.89	0.74
FL-7	8 (claypan TEC)	0.95	0.95	0.95	0.84
FL-9	4	0.65	0.79	0.8	0.55
gosn01	4	0.67	0.88	0.74	0.57
gosn02	23a	0.86	0.94	0.91	0.79
gosn03	4	0.71	0.86	0.81	0.51
gosn04	23a	0.81	0.9	0.86	0.71
gosn05	S03	0.86	0.5	0.6	1
gosn12	23a	0.86	0.97	0.88	0.76
gosn13	23a	0.8	0.96	0.91	0.86
hart01	20a	1	0.97	0.97	0.97
hart02	S02	0.79	0.83	0.78	0.82
hart03	S02	0.81	0.78	0.71	0.84
hart04	23a	0.9	0.97	0.97	0.83
lamb1	3a	0.98	0.98	1	0.9
lamb2	3a	0.96	0.98	0.98	0.9
M53	20a	0.88	0.98	0.95	0.91
m5302	20a	0.9	0.95	0.92	0.78
m5303	20a	0.93	1	0.95	0.92
m5304	2	0.84	0.93	0.87	0.8
m5305	3a	0.92	1	0.97	0.88
m5306	3a	0.92	0.92	0.89	0.79
maida01	20a	0.89	0.98	0.95	0.83

Regional Site ID	FCT	Dissimilarity Values for the Study Area			
		GGS-06	GGS-07	GGS-08	GGS-11
maida02	20a	0.97	1	1	0.9
MUD-2	8 (claypan TEC)	0.97	0.93	0.96	0.85
MUD-3	8 (claypan TEC)	0.93	0.89	0.93	0.91
MUD-4	3a	0.91	0.93	0.95	0.83
MUD-5	3a	0.84	0.94	0.92	0.85
MUD-6	8 (claypan TEC)	0.95	0.95	0.98	0.84
MUD-7	8 (claypan TEC)	0.94	0.94	0.94	0.87
MUD-9	8 (claypan TEC)	0.96	0.94	0.94	0.88
Norm03	20b	0.94	0.97	0.97	0.83
Norm04	3b	0.95	0.97	0.97	0.83
Norm06	3b	0.94	0.97	0.97	0.88
Norm07	20b	0.93	0.96	0.96	0.91
perth01	12	0.96	0.86	0.87	0.93
perth02	5	0.73	0.76	0.71	0.72
perth03	20b	0.89	0.94	0.97	0.85
perth04	23a	0.88	0.95	0.93	0.8
perth05	7 (claypan TEC)	0.94	0.88	0.88	0.84
perth06	23a	0.85	0.95	0.89	0.81
perth07	20a	0.94	1	0.94	0.84
Redh01	S08	0.88	0.97	0.94	0.92
Redh02	S08	0.96	1	0.96	0.89
Redh03	S08	0.92	0.96	0.96	0.89
Redh04	S08	0.92	0.96	0.96	0.86
Redh05	S15	0.95	0.94	0.89	1
Redh06	S08	0.88	0.97	0.94	0.83
Redh07	S08	0.93	1	0.96	0.91
Redh09	S08	0.93	1	0.96	0.97
Redh10	S08	0.92	1	0.96	0.93
Rush01	20b	0.98	0.95	0.95	0.86
Rush02	20b	0.92	0.97	0.97	0.9
Rush03	3b	0.97	0.97	0.97	0.93
serp01	3b	0.94	0.94	0.97	0.79
serp02	3b	0.91	0.94	0.97	0.78
serp03	3b	0.96	1	1	0.9
serp04	3b	0.97	0.97	0.97	0.91
talb1	3c	0.91	0.98	0.93	0.85

Regional Site ID	FCT	Dissimilarity Values for the Study Area			
		GGS-06	GGS-07	GGS-08	GGS-11
talb10	20c	0.92	1	0.96	0.83
talb11	20c	0.92	1	0.94	0.9
talb12	3c	0.91	0.98	0.95	0.85
talb13	3c	0.91	0.97	0.94	0.89
talb2	20c	0.92	0.98	0.94	0.84
talb3	20c	0.88	1	0.95	0.8
talb4	3c	0.93	0.96	0.96	0.85
talb5	20c	0.82	0.97	0.92	0.76
talb6	20c	0.91	0.97	0.94	0.78
talb7	20c	0.88	0.97	0.94	0.84
talb8	20c	0.88	0.98	0.96	0.8
talb9	20c	0.93	1	0.95	0.86
xlamb01	20b	0.96	0.96	0.96	0.9
YULE-1	23a	0.86	0.94	0.94	0.73
YULE-2	23a	0.87	0.94	0.92	0.8
YULE-3	21c	0.89	0.94	0.94	0.83
YULE-4	10a (claypan TEC)	0.93	0.96	0.92	0.9
YULE-5	7 (claypan TEC)	0.91	0.95	0.95	0.88