Application form: Works Approval / Licence / Renewal / Amendment / Registration

Part V Division 3, *Environmental Protection Act 1986*
Environmental Protection Regulations 1987

Part 1: Application type

INSTRUCTIONS:

- **Completion of this form is a statutory requirement under s.54(1)(a) of the *Environmental Protection Act 1986* (WA) (EP Act) for works approval applications; s.57(1)(a) for licence and licence renewal applications; s.59B(1)(a) for applications for an amendment; and under r.5B(2)(a) of the Environmental Protection Regulations 1987 (WA) (EP Regulations) for applications for registration of premises.**
- **The instructions set out in this application form are general in nature.**
- **A reference to 'you' in these instructions is a reference to the applicant.**
- **The information provided to you by the Department of Water and Environmental Regulation (DWER) in relation to making applications does not constitute legal advice. DWER recommends that you obtain independent legal advice.**
- **Applicants seeking further information relating to requirements under the EP Act and/or EP Regulations are directed to the Parliamentary Counsel's Office website (www.legislation.wa.gov.au). Schedule 1 of the EP Regulations contains the categories of prescribed premises.**
- **For prescribed premises where activities fall within more than one category, ALL applicable categories must be identified. This applies for existing prescribed premises seeking renewal or amendment, as well as new prescribed premises.**
- **The application form must be completed with all relevant information attached. Attachments can be combined and submitted as one or more consolidated documents if desired, provided it is clear which section of the application form the information / attachments relate to. Where attachments are submitted separately, avoid duplicating information. Ensure that any cross-references between the application form and the supporting document(s) are accurate.**
- **If an application form has been submitted which is incomplete or materially incorrect, the Chief Executive Officer of DWER (CEO) will decline to deal with the application and advise the applicant accordingly.**
- **On completing this application form, please submit it to DWER in line with the instructions in Part 15 of the form.**

1.1	**This is an application for:** *[Select one option only. Your application may be returned if multiple options are selected.]* under Part V, Division 3 of the EP Act. Please see the: • *Guideline: Industry Regulation Guide to Licensing* • *Procedure: Prescribed premises works approvals and licences* for more information to assist in understanding DWER's regulatory regime for prescribed premises.	☒ Works approval ☐ Licence Existing registration number(s): [ ] Existing works approval number(s): [ ] ☐ Renewal Existing licence number: [ ] ☐ Amendment Number of the existing licence or works approval to be amended: [ ] ☐ Registration (works approval already obtained) Existing works approval number(s): [ ]
1.2	**For a works approval amendment or licence amendment, are there less than 90 business days until the expiry of the existing works approval or licence?** Only active instruments can be amended. Applications to amend a works approval or licence must be made 90 business days or more prior to the existing works approval or licence expiring to ensure there is adequate time to assess the amendment.	**Yes** ☐
1.3	**This application is for the following categories of prescribed premises:** *(specify all prescribed premises category numbers)*	Category 62: Solid waste depot The Licence also includes the following additional categories: Category 61A: Solid waste facility Category 62: Solid waste depot Category 63: Class I inert landfill Category 64: Class II & III putrescible landfill site

Part 1: Application type

☒	All activities that meet the definition of a prescribed premises as set out in Schedule 1 of the EP Regulations have been specified above (tick, if yes).

Completion Matrix

The matrix below explains what sections are required to be completed for different types of applications.

Application form section	New application / registration	Renewal	Amendment
Part 1: Application type	•	•	•
Part 2: Applicant details	•	•	•
Part 3: Premises details	•	•	Δ
Part 4: Proposed activities	•	•	•
Part 5: Index of Biodiversity Surveys for Assessment and Index of Marine Surveys for Assessment	If required.	If required.	If required.
Part 6: Other DWER approvals	•	•	•
Part 7: Other approvals and consultation	•	•	•
Part 8: Applicant history	•	•	Δ
Part 9: Emissions, discharges, and waste	•	•	Δ
Part 10: Siting and location	•	•	Δ
Part 11: Submission of any other relevant information	•	•	If required.
Part 12: Category checklist(s)	•	•	•
Part 13: Proposed fee calculation	•	•	•
Part 14: Commercially sensitive or confidential information	•	•	•
Part 15: Submission of application	•	•	•
Part 16: Declaration and signature	•	•	•
Attachment 1A: Proof of occupier status	•	•	N/A
Attachment 1B: ASIC company extract	•	•	N/A
Attachment 1C: Authorisation to act as a representative of the occupier	•	•	•
Attachment 2: Premises map/s	•	•	Δ
Attachment 3A: Environmental commissioning plan	If required.	N/A	If required
Attachment 3B: Proposed activities	•	•	Δ
Attachment 3C: Map of area proposed to be cleared (only applicable if clearing is proposed)	•	•	•
Attachment 3D: Additional information for clearing assessment	If required.	If required.	If required.
Attachment 4: Marine surveys (only applicable if marine surveys included in application)	•	•	•
Attachment 5: Other approvals and consultation documentation	•	•	Δ
Attachment 6A: Emissions and discharges	If required.	If required.	If required.
Attachment 6B: Waste acceptance	If required.	If required.	If required.
Attachment 7: Siting and location	•	•	Δ
Attachment 8: Additional information submitted	If required.	If required.	If required.
Attachment 9: Category-specific checklist(s)	•	If required.	If required.
Attachment 10: Proposed fee calculation	•	•	•
Attachment 11: Request for exemption from publication	If required.	If required.	If required.

Key:

•	**Must be completed / submitted.**
Δ	**To the extent changed / required in relation to the amendment.**
N/A	**Not required with application, but may be requested subsequently depending on DWER records.**
"If required"	**Sections for applicants to determine.**

Part 2: Applicant details

INSTRUCTIONS:

- **The applicant (the occupier of the premises) must be an individual(s), a company, body corporate, or public authority, but not a partnership, trust, or joint-venture name. Applications made by or on behalf of business names or unincorporated associations will not be accepted.**
- **If applying as an individual, your full legal name must be provided.**
- **If applying as a company, body corporate, or public authority, the full legal entity name must be inserted.**
- **Australian Company Number's (ACN) must be provided for all companies or body corporates.**
- **DWER prefers to send all correspondence electronically via email. We request that you consent to receiving all correspondence relating to instruments and notices under Part V of the EP Act (Part V documents) electronically via email, by indicating your consent in Section 2.3.**
- **Companies or body corporates making an application must nominate an authorised representative from within their organisation. Proof of authorisation must be submitted with the application (see Section 2.10). If you are applying as an individual, you are the representative.**
- **Details of a contact person must be provided for DWER enquiries in relation to your application. This contact person can be a consultant if authorised to represent the applicant. Written evidence of this authorisation must be provided.**
- **Details of the occupier of the premises must be provided. One of the options must be selected and if you have been asked to specify, please provide details. For example, if 'lease holder' has been selected, please specify the type of lease (for example, pastoral lease, mining lease, or general lease) and provide a copy of the lease document(s). Note that contracts for sale of land will not be sufficient evidence of occupancy status.**

2.1	**Applicant name/s (full legal name/s):** The proposed holder of the works approval, licence or registration.	City of Cockburn	
	ACN (if applicable):	N/A	
2.2	**Trading as (if applicable):**	N/A	
2.3	**Authorised representative details:** The person authorised to receive correspondence and Part V documents on behalf of the applicant under the EP Act. Where 'yes' is selected, all correspondence will be sent to you via email, to the email address provided in this section. Where 'no' has been selected, Part V documents will be posted to you in hard copy to the postal / business address specified in Section 2.4, below. Other general correspondence may still be sent to you via email.	Name	[redacted]
		Position	
		Telephone	
		Email	
		I consent to all written correspondence between myself (the applicant) and DWER, regarding the subject of this application, being exclusively via email, using the email address I have provided above.	**Yes** ☒ **No** ☐

Part 2: Applicant details			
2.4	**Registered office address, as registered with the Australian Securities and Investments Commission (ASIC):** This must be a physical address to which a Part V document may be delivered.	9 Coleville Crescent SPEARWOOD WA 6163	
2.5	**Postal address for all other correspondence:** If different from Section 2.4.	As above	
2.6	**Contact person details for DWER enquiries relating to the application (if different from the authorised representative):** For example, could be a consultant or a site-based employee.	Name	As above
		Position	
		Organisation	
		Address	
		Telephone	
		Email	
2.7	**Occupier status:** Occupier is defined in s.3 of the EP Act and includes a person in occupation or control of the premises, or occupying a different part of the premises whether or not that person is the owner. Note: if a lease holder, the applicant must be the holder of an executed lease, not just an agreement to lease.	Registered proprietor on certificate of title.	☒
		Lease holder (please specify, including date of expiry of lease).	☐
		Public authority that has care, control, or management of the land.	☐
		Other evidence of legal occupation or control (please specify – for example, joint venture operating entity, contract, letter of operational control, or other legal document or evidence of legal occupation).	☐

Attachments			N/A	Yes
2.8	**Attachment 1A: Proof of occupier status**	Copies of certificate of title, lease, or other instruments evidencing proof of occupier status, including the expiry date or confirmation that there is no expiry date, have been provided and labelled as Attachment 1A.	☒	☐
2.9	**Attachment 1B: ASIC company extract**	A current company information extract (not the company information summary) purchased from the ASIC website(s) for all new applications / registrations has been provided and labelled as Attachment 1B.	☒	☐
2.10	**Attachment 1C: Authorisation to act as representative of the occupier**	A copy of the documentation authorising the applicant to act on the occupier's behalf as their authorised agent/representative has been provided and labelled as Attachment 1C.	☒	☐

Part 3: Premises details				
3.1	**Premises description (whole or part to be specified):** Include the land description (volume and folio number, lot, or location number/s); Crown lease or reserve number; pastoral lease number; or mining tenement number (as appropriate), of all properties, as shown on title details registered with Landgate.		Lot 202 on Deposited Plan 60443 Lot 2 on Diagram 17988 Lot 235 on Deposited Plan 226117	
	Premises street address Include the suburb.		920 Rockingham Road WATTLEUP WA 6166	
	Premises name (if applicable):		Henderson Waste Recovery Park	
3.2	**Local Government Authority area:** City, Town, or Shire.		City of Cockburn	
3.3	**GPS (latitude and longitude) coordinates:** GPS coordinates determined using the GDA 2020 (Geographic latitude / longitude) coordinate system and datum must be provided for all points around the proposed premises boundary, where the entirety of the cadastre (land parcel) or mining tenements are not used as the premises boundary.		32º 09' 47" S 115º 48' 00" E	
Attachments				**N/A** / **Yes**
3.4	**Attachment 2: Premises map(s)**	You must provide as an attachment to this application form, labelled Attachment 2, either: 1. an aerial photograph, map, and site plan of sufficient scale showing the proposed prescribed premises boundary *or* 2. where available, a map of the proposed premises boundary and site plan as an ESRI shapefile (accepted file types include .dbf, .shp, .prj, and .shx) with the following properties (provided on a suitable portable digital storage device, if submitting application in hard copy form): • Geometry type: Polygon Shape • Coordinate system: GDA 2020 (Geographic latitude / longitude) • Datum: GDA 2020 (Geocentric Datum of Australia 2020). You must also provide a map or maps of the prescribed premises, clearly identifying and labelling: • layout of key infrastructure and buildings, clearly labelled; • the premises boundary (where the premises boundary does not align with the entirety of the cadastral boundary, identify the Lot Number for which the premises is part of); • emission and discharge points (with precise GPS coordinates where available); • monitoring points (with precise GPS coordinates where available); • sensitive receptors and land uses • all areas proposed to be cleared (if applicable). Maps must contain a north arrow, clearly marking the area in which the activities are carried out. The map or maps must be of reasonable clarity and have a visible scale.	☒	☐

Part 4: Proposed activities

INSTRUCTIONS:

- **You must provide a description and the scope, size and scale of all prescribed activities of Schedule 1 to the EP Regulations including the maximum production or design capacity of each prescribed activity.**
- **If applying for a works approval or licence amendment involving the construction of new infrastructure, you must provide information on infrastructure to be constructed and how long construction is expected to take. You must confirm if commissioning is to occur and how long it will take.**
- **If applying for a works approval or licence amendment *not* involving the construction of new infrastructure, provide details of the proposed amendment.**
- **You must identify all emission sources on the premises map/s.**
- **You must also provide information on activities which directly relate to the prescribed premises category which have, or are likely to result in, an emission or discharge.**
- **If clearing activities are proposed provide a description and details. If a relevant exemption under Schedule 6 of the EP Act or r.5 of the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (WA) (Clearing Regulations) may apply, provide details.**
- **Note that in some cases, DWER may require that the clearing components of a works approval or licence (or amendment) application be submitted separately through the clearing permit application process. Refer to the *Procedure: Prescribed premises works approvals and licences* for further guidance.**
- **Please note that the requested information is critical to DWER's understanding of the proposed activities. The more accurate, specific, and complete the information provided in the application, the less uncertainty that DWER may identify in the application, therefore facilitating completion of the assessment in a more efficient and timely manner.**

4.1 **Prescribed premises infrastructure and equipment**

In Table 4.1 (below), provide a list of all items of infrastructure and equipment within the boundary of the prescribed premises relevant to this application, and include the following details for each:

- **relevant categories (if known) –** the categories of prescribed premises (as listed under Schedule 1 of the EP Regulations) that relate to that infrastructure or equipment;
- **site plan reference –** the location of that infrastructure or equipment (with reference to the site plan map or maps provided above in Section 3.4 and labelled as Attachment 2 – e.g. use GPS coordinates or a clear description such as *"labelled as [label on premises map] on Map A"*);
- **is it critical containment infrastructure (CCI)? –** indicate if the identified infrastructure or equipment would be categorised as CCI. Refer to the *Guideline: Industry Regulation Guide to Licensing* for further information on CCI; and
- **is environmental commissioning required? –** indicate if environmental commissioning is intended to be undertaken for that item of infrastructure or equipment. Refer to the *Guideline: Industry Regulation Guide to Licensing* for further information on environmental commissioning.

Add additional rows to Table 4.1 (below) as required.

Table 4.1: Infrastructure and equipment

	Infrastructure and equipment	Relevant categories (if known)	Site plan reference	CCI? (mark if yes)	Environmental commissioning? (mark if yes)
1.	Refer to the attached supporting documentation.			☐	☐
2.	All other infrastructure and equipment is to remain the same as per L9159/2018/2.			☐	☐
3.				☐	☐
4.				☐	☐
5.				☐	☐
6.				☐	☐
7.				☐	☐
8.				☐	☐
9.				☐	☐
10.				☐	☐

Part 4: Proposed activities		
4.2	**Detailed description of proposed activities or proposed changes (if an amendment):** You must provide details of proposed activities relevant to this application within the boundary of the prescribed premises, identifying: • scope, size, and scale of the project, including details as to production or design capacity (and/or frequency, if applicable); • key infrastructure and equipment; • description of processes or operations (a process flow chart may be included as an attachment); • emission / discharge points; • locations of waste storage or disposal • activities occurring during construction, environmental commissioning, and operation (if applicable). If assessment and imposition of conditions to allow environmental commissioning to be undertaken are requested, please provide an environmental commissioning plan as Attachment 3A (see 4.11 below). Additional information relating to the proposed activities may be included in Attachment 3B (see 4.12 below).	
	Construction activities (if applicable):	
	Refer to the attached supporting documentation.	
	Environmental commissioning activities (if applicable): Refer to the *Guideline: Industry Regulation Guide to Licensing* for further guidance.	
	N/A	
	Time limited operations activities (if applicable): Different elements of the premises may require time limited operations to commence at different times. In these circumstances, please specify the infrastructure and/or equipment for which time limited operations authorisation is being applied for. If time limited operations are expected to differ from future licensed operations, specify how and why this would be the case. Refer to the *Guideline: Industry Regulation Guide to Licensing* for further guidance.	
	Refer to the attached supporting documentation.	
	Operations activities (for a licence):	
	Refer to the attached supporting documentation.	
4.3	**Estimated operating period of the project / premises (e.g. based on estimated infrastructure life):**	+20 years
4.4	**Proposed date(s) for commencement of works (if applicable):**	2025/2026 financial year – February 2026
4.5	**Proposed date(s) for conclusion of works construction (if applicable):** This date should coincide with the submission to DWER of an Environmental Compliance Report(s) and/or a Critical Containment Infrastructure Report(s) as required. Refer to the *Guideline: Industry Regulation Guide to Licensing*.	2026/2027 financial year – May 2026
4.6	**Proposed date(s) for environmental commissioning of works (if applicable):** Refer to the *Guideline: Industry Regulation Guide to Licensing*.	N/A
4.7	**Proposed date/s for commencement of time limited operations under works approval (if applicable):** Refer to the *Guideline: Industry Regulation Guide to Licensing*.	Immediately after the completion of construction

Part 4: Proposed activities				
4.8	**Maximum production or design capacity for each category applied for (based on infrastructure operating 24 hours a day, 7 days a week):** Provide figures for all categories listed in Section 1.2. Units of measurement must be the same as the units of measurement associated with the relevant category as identified in Schedule 1 of the EP Regulations.		The maximum capacity for Cat 62 will remain at 40,400 tonnes per annual period, as per L9159/2018/2.	
4.9	**Estimated / actual throughput for each category applied for:** Provide figures for all categories listed in Section 1.2. Units of measurement must be the same as the units of measurement associated with the relevant category as identified in Schedule 1 of the EP Regulations.		The estimated throughput for Cat 62 green waste is ~15,000 tonnes per annum.	
Attachments			**N/A**	**Yes**
4.10	**Attachment 2: Premises map**	Emission/discharge points are clearly labelled on the map/s required for Part 3.4 (Attachment 2).	☒	☐
4.11	**Attachment 3A: Environmental commissioning plan**	If applying to construct works or install equipment, and environmental commissioning of the works or equipment is planned, an environmental commissioning plan has been included in Attachment 3A. The environmental commissioning plan is expected to include, at minimum, identification of: • the sequence of commissioning activities to be undertaken, including details on whether they will be done in stages; • a summary of the timeframes associated with the identified sequence of commissioning activities; • the inputs and outputs that will be used in the commissioning process; • the emissions and/or discharges expected to occur during commissioning; • the emissions and/or discharges that will be monitored and/or confirmed to establish or test a steady-state operation (e.g. identifying emissions surrogates, etc.), including a detailed emissions monitoring program for the measurement of those emissions and/or discharges; • the controls (including management actions) that will be put in place to address the expected emissions and/or discharges; • any contingency plans for if emissions exceedances or unplanned emissions and/or discharges occur • how any of the above would differ from standard operations once commissioning is complete. Note that DWER will not include conditions on a granted instrument that authorise environmental commissioning activities where it is not satisfied that the risks associated with environmental commissioning can be adequately addressed.	☒	☐
4.12	**Attachment 3B: Proposed activities**	Additional information relating to the proposed activities has been included in Attachment 3B (if required).	☐	☒
Clearing activities 4.13 to 4.19 are only required if the application includes clearing of native vegetation.				
4.13	**Proposed clearing area (hectares and/or number of individual trees to be removed):**		Not applicable	
4.14	**Details of any relevant exemptions:** Refer to DWER's *A guide to the exemptions and regulations for clearing native vegetation*.		Not applicable	

Part 4: Proposed activities				
4.15	**Proposed method of clearing:**		Push over trees with excavator, cut up and remove from the works area.	
4.16	**Period within which clearing is proposed to be undertaken:** For example, May 2020 – June 2020.		Not applicable	
4.17	**Purpose of clearing:**			
	Not applicable			
Clearing activities – Attachments			**N/A**	**Yes**
4.18	**Attachment 3C: Map of area proposed to be cleared**	You must provide: an aerial photograph or map of sufficient scale showing the proposed clearing area and prescribed premises boundary *OR* if you have the facilities, a suitable portable digital storage device of the area proposed to be cleared as an ESRI shapefile with the following properties: • Geometry type: Polygon Shape • Coordinate system: GDA 2020 (Geographic latitude / longitude) • Datum: 2020 1994 (Geocentric Datum of Australia 2020).	☒	☐
4.19	**Attachment 3D: Additional information for clearing assessment**	Additional information to assist in the assessment of the clearing proposal may be attached to this application (for example, reports on salinity, fauna or flora studies or other environmental reports conducted for the site).	☒	☐

Part 5: Index of Biodiversity and Marine Surveys for Assessments (IBSA and IMSA)				
INSTRUCTIONS: • **Biodiversity surveys should be submitted through the IBSA Submissions Portal at ibsasubmissions.dwer.wa.gov.au** • **Biodiversity surveys submitted to support this application must meet the requirements of the EPA's *Instructions for the preparation of data packages for the Index of Biodiversity Surveys for Assessments (IBSA)*.** • **Marine surveys submitted to support this application must meet the requirements of the EPA's Instructions for the preparation of data packages for the Index of Marine Surveys for Assessments (IMSA).** • **If these requirements are not met, DWER will decline to deal with the application.**				
Attachments			**N/A**	**Yes**
5.1	**Biodiversity surveys** Please provide the IBSA number(s) (or submission number(s) if IBSA number has not yet been issued) in the space provided. Note that a submission number is not confirmation of acceptance of a biodiversity survey and is not the same as an IBSA number. IBSA numbers are only issued once a survey has been accepted. Once an IBSA number is issued, please notify the department.	All biodiversity surveys submitted with this application meet the requirements of the EPA's *Instructions for the preparation of data packages for the Index of Biodiversity Surveys for Assessments (IBSA)*.	☒	☐
		Submission number(s)		
		IBSA number(s)		
5.2	**Attachment 4:** **Marine surveys**	All marine surveys submitted with this application meet the requirements of the EPA's *Instructions for the preparation of data packages for the Index of Marine Surveys for Assessments (IMSA)*.	☒	☐

Part 6: Other DWER approvals

INSTRUCTIONS:

- **If you have applied, or intend to apply, for other approvals within DWER that may be relevant to this application, you must provide relevant details.**
- **If you have referred, or intend to refer, your proposal to the Environmental Protection Authority (EPA), you must provide the requested details.**

Pre-application scoping

6.1	**Have you had any pre-application / pre-referral / scoping meetings with DWER regarding any planned applications?**	☒ No ☐ Yes – provide details:

Environmental impact assessment (Part IV of the EP Act)

6.2	**Have you referred or do you intend to refer the proposal to the EPA?** Section 37B(1) of the EP Act defines a 'significant proposal' as *"a proposal likely, if implemented, to have a significant effect on the environment"*. If DWER considers that the proposal in this application is likely to constitute a 'significant proposal', DWER is required under s.38(5) of the EP Act to refer the proposal to the EPA for assessment under Part IV, if such a referral has not already been made. If a relevant Ministerial Statement already exists, please provide the MS number in the space provided.	☐ Yes (referred) – reference (if known): [ ] ☐ Yes – intend to refer (proposal is a 'significant proposal') ☐ Yes – intend to refer (proposal will require a s.45C amendment to the current Ministerial Statement): MS [ ] ☐ No – a valid Ministerial Statement applies: MS 271 ☒ No – not a 'significant proposal'

Clearing of native vegetation (Part V Division 2 of the EP Act and *Country Area Water Supply Act 1947*)

6.3	**Have you applied or do you intend to apply for a native vegetation clearing permit?** In accordance with the *Guideline: Industry Regulation Guide to Licensing* and *Procedure: Native vegetation clearing permits*, where clearing of native vegetation: • is exempt under Schedule 6 of the EP Act or the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (WA) (refer to *A guide to the exemptions and regulations for clearing native vegetation*) • is being assessed by a relevant authority which would lead to an exemption under Schedule 6 of the EP Act, or • has been referred under s.51DA of the EP Act and a determination made that a clearing permit is not required (refer to the *Guideline: Native vegetation clearing referrals*), the clearing will not be reassessed by DWER or be subject to any additional controls by DWER. If the proposed clearing action is to be assessed in accordance with, or under, an *Environment Protection and Biodiversity Conservation Act* (Cth) (EPBC Act) accredited process, such as the assessment bilateral agreement, the clearing permit application *Form Annex C7 – Assessment bilateral agreement* must be completed and attached to your clearing permit application.	☐ Yes – clearing application reference (if known): ☐ Yes – a valid EP Act clearing permit already applies: CPS 10485/1 ☐ No – this application includes clearing (please complete Sections 4.13 to 4.19 above) ☒ No – permit not required (no clearing of native vegetation) ☐ No – permit not required (clearing referral decision): CPS [ ] ☐ No – an exemption applies (explain why):

Part 6: Other DWER approvals		
6.4	**Have you applied or do you intend to apply for a *Country Area Water Supply Act 1947* licence?** If a clearing exemption applies in a *Country Area Water Supply Act 1947* (CAWS Act) controlled catchment, or if compensation has previously been paid to retain the subject vegetation, a CAWS Act clearing licence is required. If yes, contact the relevant DWER regional office for a Form 1 *Application for licence*. Map of CAWS Act controlled catchments	☐ Yes – application reference (if known): [ ] ☐ No – a valid licence applies: [ ] ☒ No – licence not required
Water licences and permits (*Rights in Water and Irrigation Act 1914*)		
6.5	**Have you applied, or do you intend to apply for:** **1. a licence or amendment to a licence to take water (surface water or groundwater); or** **2. a licence to construct wells (including bores and soaks); or** **3. a permit or amendment to a permit to interfere with the bed and banks of a watercourse?** For further guidance on water licences and permits under the *Rights in Water and Irrigation Act 1914*, refer to the *Procedure: Water licences and permits*.	☐ Yes –application reference (if known): [ ] ☐ No – a valid licence / permit applies: Licence Number: ☐ No – an exemption applies (explain why): ☒ No – licence / permit not required

Part 7: Other approvals and consultation

INSTRUCTIONS:

- **Please provide copies of all relevant documentation indicated below, including any conditions, exclusions, or expiry dates.**
- **"Major Project" means:**
  - **A State Development Project, where the lead agency is the Department of Jobs, Tourism, Science and Innovation (including projects to which a State Agreement applies); or**
  - **A Level 2 or 3 proposal, as defined in the Department of Premier and Cabinet's *Lead Agency Framework*.**

		N/A	No	Yes
7.1	**Is the proposal a Major Project?**		☒	☐
7.2	**Is the proposal subject to a State Agreement Act?**		☒	☐
	If yes, specify which Act:			
7.3	**Has the proposal been allocated to a "Lead Agency" (as defined in the *Lead Agency Framework*)?**		☒	☐
	If yes, specify Lead Agency contact details:			
7.4	**Has the proposal been referred and/or assessed under the EPBC Act (Commonwealth)?**	☐	☒	☐
	If yes, please specify referral, assessment and/or approval number:			
7.5	**Has the proposal obtained all relevant planning approvals?**	☒	☐	☐
	If planning approval is necessary but has not been obtained, please provide details indicating why:			
	If planning approval is not necessary, please provide details indicating why:			

Part 7: Other approvals and consultation				
7.6	**For renewals or amendment applications, are the relevant planning approvals still valid (that is, not expired)?**	☒	☐	☐
7.7	**Has the proposal obtained all other necessary statutory approvals (not including any other DWER approvals identified in Part 6 of this application)?**	☒	☐	☐
	If no, please provide details of approvals already obtained, outstanding approvals, and expected dates for obtaining these outstanding approvals:			
		N/A	**No**	**Yes**
7.8	**Has consultation been undertaken with parties considered to have a direct interest in the proposal (that is, interested parties or persons who are considered to be directly affected by the proposal)?** DWER will give consideration to submissions from interested parties or persons in accordance with the *Guideline: Industry Regulation Guide to Licensing*.	☒	☐	☐
Attachments			**N/A**	**Yes**
7.9	**Attachment 5: Other approvals and consultation documentation** — Details of other approvals specified in Part 7 of this application, including copies of relevant decisions and any consultation undertaken with direct interest stakeholders have been provided and labelled Attachment 5.		☒	☐

Part 8: Applicant history				
Note: • **DWER will undertake an internal due diligence of the applicant's fitness and competency based on DWER's compliance records and the responses to Part 8 of the form.** • **If you wish to provide additional information for DWER to consider in making this assessment, you may provide that information as a separate attachment (see Part 11).**				
		N/A	**No**	**Yes**
8.1	If the applicant is an individual, has the applicant previously held, or do they currently hold, a licence or works approval under Part V of the EP Act?	☒	☐	☐
8.2	If the applicant is a corporation, has any director of that corporation previously held, or do they currently hold, a licence or works approval under Part V of the EP Act?	☒	☐	☐
8.3	If yes to 8.1 or 8.2 above, specify the name of company and/or licence or works approval number:			
8.4	If the applicant is an individual, has the applicant ever been convicted, or paid a penalty, for an offence under a provision of the EP Act, its subsidiary legislation, or similar environmental protection or health-related legislation in Western Australia or elsewhere in Australia?	☒	☐	☐
8.5	If the applicant is a corporation, has any director of that corporation ever been convicted, or paid a penalty, for an offence under a provision of the EP Act, its subsidiary legislation, or similar environmental protection or health-related legislation in Western Australia or elsewhere in Australia?	☒	☐	☐
8.6	If the applicant is a corporation, has any person concerned in the management of the corporation, as referred to in s.118 of the EP Act, ever been convicted of, or paid a penalty, for an offence under a provision of the EP Act, its subsidiary legislation, or similar environmental protection or health-related legislation in Western Australia or elsewhere in Australia?	☒	☐	☐
8.7	If the applicant is a corporation, has any director of that corporation ever been a director of another corporation that has been convicted, or paid a penalty, for an offence under a provision of the EP Act, its subsidiary legislation, or similar environmental protection or health-related legislation in Western Australia or elsewhere in Australia?	☒	☐	☐

Part 8: Applicant history				
8.8	With regards to the questions posed in 8.4 to 8.7 above, have any legal proceedings been commenced, whether convicted or not, against the applicant for an offence under a provision of the EP Act, its subsidiary legislation, or similar environmental protection or health-related legislation in Western Australia or elsewhere in Australia?	☒	☐	☐
8.9	Has the applicant had a licence or other authority suspended or revoked due to a breach of conditions or an offence under the EP Act or similar environmental protection or health-related legislation in Western Australia or elsewhere in Australia?	☐	☒	☐
8.10	If the applicant is a corporation, has any director of that corporation ever had a licence or other authority suspended or revoked due to a breach of conditions or an offence under the EP Act or similar environmental protection or health-related legislation in Western Australia or elsewhere in Australia?	☒	☐	☐
8.11	If the applicant is a corporation, has any director of that corporation ever been a director of another corporation that has ever had a licence or other authorisation suspended or revoked due to a breach of conditions or an offence under the EP Act or similar environmental protection or health-related legislation in Western Australia or elsewhere in Australia?	☒	☐	☐
8.12	If yes to any of 8.4 to 8.11 above, you must provide details of any charges, convictions, penalties paid for an offence, and/or licences or other authorisations suspended or revoked:			

Part 9: Emissions, discharges, and waste

INSTRUCTIONS:

- **Please see *Guideline: Risk Assessments* and provide all information relating to emission sources, pathways and receptors relevant to the application.**
- **You must provide details on sources of emissions (for example, kiln stack, baghouses or discharge pipelines) including fugitive emissions (for example, noise, dust or odour), types of emissions (physical, chemical, or biological), and volumes, concentrations and durations of emissions.**
- **The potential for emissions should be considered for all stages of the proposal (where relevant), including during construction, commissioning and operation of the premises.**

		No	Yes
9.1	**Are there potential emissions or discharges arising from the proposed activities?**	☐	☒
	If yes, identify all potential emissions and discharges arising from the proposed activities and complete Table 9.1: Emissions and discharges (below).		

Part 9: Emissions, discharges, and waste

☐ Gaseous and particulate emissions (e.g. emissions from stacks, chimneys or baghouses)

☒ Dust (e.g. from equipment, unsealed roads and/or stockpiles, etc.)

☐ Wastewater discharges (e.g. treated sewage, wash water, or process water discharged to lands or waters)

☐ Waste and leachate (e.g. emissions through seepage, leaks and spills of waste from storage, process and handling areas, etc.)

☒ Noise (e.g. from machinery operations and/or vehicle operations)

☒ Odour (e.g. from wastes accepted at putrescible landfills, storage or processing of waste or other odorous materials, etc.)

☒ Contaminated or potentially contaminated stormwater (e.g. stormwater with the potential to come into contact with chemicals or waste materials, etc.)

☐ Electromagnetic radiation[1]

☐ Other (please specify): [ ]

[1] Note that for electromagnetic radiation, copies/details of other relevant approvals (such as from the Department of Mines, Industry Regulation and Safety or the Radiological Council) must be provided where applicable.

Details of any pollution control equipment or waste treatment system, including any control mechanisms used to ensure proper operation of this equipment, must be included in the proposed controls column of the 'Emissions and discharges table' below. Details of management measures employed to control emissions should also be included. Please provide / attach any relevant documents (e.g. management plans, etc.).

Additional rows may be added as required and/or further information may be included as an attachment (see Section 9.3).

Table 9.1: Emissions and discharges

	Source of emission or discharge	Emission or discharge type	Volume and frequency	Proposed controls (include in Attachment 6A if extensive or complex)	Location (on site layout plan – see 3.4)
1.	Refer to the attached supporting documentation.				
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

9.2	**Waste-related activities at the premises[2]** Answer "yes" or "no" for the following questions and complete Table 9.2 (below).	**No**	**Yes**
(a)	Is waste accepted at the premises?	☐	☒
(b)	Is waste produced on the premises?	☒	☐
(c)	Is waste processed on the premises?	☐	☒
(d)	Is waste stored on the premises?	☐	☒

Part 9: Emissions, discharges, and waste

	(e)	Is waste buried on the premises?	☐	☒
	(f)	Is waste recycled on the premises?	☒	☐
	(g)	Is any of the waste listed in Table 9.2 (below) also considered a 'dangerous good' for the purposes of the Dangerous Goods Safety (Storage and Handling of Non-Explosives) Regulations 2007?[3]	☒	☐
		Specify, if yes:		

[2] Copies / details of any other relevant approvals (e.g. from the Department of Health) must be provided where applicable.

[3] Wastes derived from the storage, handling, and use of dangerous goods may be considered hazardous and may need to be handled with the same precautions. Please refer to the Department of Mines, Industry Regulation and Safety's *Dangerous Goods Safety information sheet* for more information.

Solid waste types must be described with reference to *Landfill Waste Classification and Waste Definitions 1996* (as amended from time to time) and the Environmental Protection (Controlled Waste) Regulations 2004 (Controlled Waste Regulations).

Liquid waste types must be described with reference to the Controlled Waste Regulations.

For further guidance on the definition of waste, refer to *Fact Sheet: Assessing whether material is waste*.

Detail must be provided on storage type (for example, hardstand and containment infrastructure), capacity, likely storage volumes, and containment features (for example, lining and bunding).

Additional rows may be added as required and/or further information may be included as an attachment (see Section 9.4).

Table 9.2 Waste types

	Waste type	Quantity (e.g. tonnes, litres, cubic metres)	Waste activity infrastructure (including specifications)	Monitoring (if applicable)	Location (on site layout plan – see 3.4)
1.	Refer to the attached supporting documentation.				
2.					
3.					
4.					
5.					

Attachments			N/A	Yes
9.3	**Attachment 6A: Emissions and discharges** (if required)	If required, further information for Section 9.1 has been included as an attachment labelled Attachment 6A.	☒	☐
9.4	**Attachment 6B: Waste acceptance** (if required)	If required, further information for Section 9.2 has been included as an attachment labelled Attachment 6B.	☒	☐

Part 10: Siting and location

10.1	**Sensitive land uses** What is/are the distance(s) to the nearest sensitive land use(s)? A sensitive land use is a residence or other land use which may be affected by an emission or discharge associated with the proposed activities.	Refer to the attached supporting documentation.

10.2 **Nearby environmentally sensitive receptors and aspects**

Identify in Table 10.2 (below):

- all instances of environmentally sensitive receptors that are known or suspected to be present within, or within close proximity to, the proposed prescribed premises boundary;
- the nature of the sensitive receptors (e.g. type of Threatened Ecological Community, species or threatened flora or fauna, etc.);
- their actual or approximate known distance and direction from the premises boundary (at the closest point/s); and
- if applicable, what measures have been or will be taken to ensure that sensitive receptors are not adversely impacted by any emissions or discharges from the premises.

Part 10: Siting and location

Refer to the *Guideline: Environmental siting* for further guidance.

Table 10.2: Nearby environmentally sensitive receptors and aspects

Type / classification	Description	Distance + direction to premises boundary	Proposed controls to prevent or mitigate adverse impacts (if applicable)
Environmentally Sensitive Areas [1]	Refer to the attached supporting documentation.		
Threatened Ecological Communities			
Threatened and/or priority fauna			
Threatened and/or priority flora			
Aboriginal and other heritage sites [2]			
Public drinking water source areas [3]			
Rivers, lakes, oceans, and other bodies of surface water, etc.			
Acid sulfate soils			
Other			

[1] Environmentally Sensitive Areas are as declared under the *Environmental Protection (Environmentally Sensitive) Notice 2005*. Refer to DWER's website ("Environmentally Sensitive Areas") for further information.

[2] Refer to the Department of Planning, Lands and Heritage website for further information about Aboriginal heritage and other heritage sites.

[3] Refer to *Water Quality Protection Note No.25: Land use compatibility tables for public drinking water source areas* for further information.

10.3 **Environmental siting context details**

Provide further information including details on topography, climate, geology, soil type, hydrology, and hydrogeology at the premises.

Refer to the attached supporting documentation.

Attachments			N/A	Yes
10.4	**Attachment 7: Siting and location**	You must provide details and a map describing the siting and location of the premises, including identification of distances to sensitive land uses and/or any specified ecosystems.	☒	☐

Part 11: Submission of any other relevant information

Attachments			No	Yes
11.1	**Attachment 8: Additional information submitted**	Applicants seeking to submit further information may include information labelled Attachment 8. If submitting multiple additional attachments, label them 8A, 8B, etc. Where additional documentation is submitted, please specify the name of documents below.	☒	☐
	List title of additional document(s) attached:			

Part 12: Category checklist(s)				
Attachments			**N/A**	**Yes**
12.1	**Attachment 9: Category checklist(s)**	DWER has developed category checklists to assist applicants with preparing their application. These checklists are available on DWER's website. The relevant category-specific checklist(s) must be completed and included with the application, labelled as Attachment 9. If attaching multiple category checklists, label them 9A, 9B, etc. Do not select "N/A" unless: • a relevant category checklist is not yet published on DWER's website, or • the application is for an amendment that does not propose changes to the method of operation, or change the inputs, outputs, infrastructure, equipment, emissions, or discharges of / from the premises. Note that that a category checklist(s) may still be required for renewal applications. You will be advised in your renewal notification letter (sent approximately twelve months before the licence expiry date) if you are required to provide the information identified in a category checklist. Where a category checklist is submitted, please specify which checklist(s) in the space below.	☒	☐
	List title(s) of category checklists attached:			

Part 13: Proposed fee calculation

INSTRUCTIONS:

Please calculate the prescribed fee using the relevant online fee calculator linked below.

- **Licence: www.der.wa.gov.au/LicenceFeeCalculator**
- **Works approval: www.der.wa.gov.au/WorksApprovalFeeCalculator**
- **Amendment: https://www.wa.gov.au/government/publications/works-approval-and-licence-amendment-fee-calculator**

Different fee units apply for different fee components. Fee units may also have different amounts depending on the period in which the calculation is made.

Once DWER has confirmed that the application submitted meets the relevant requirements of the EP Act, you will be issued an invoice with instructions for paying your application fee.

Further information on fees can be found in the *Fact Sheet: Industry Regulation fees*, and on DWER's website.

13.1	Only the relevant fee calculations are to be completed as follows: *[mark the box to indicate sections completed]*	☒ Section 13.3 for works approval applications ☐ Section 13.4 for licence / renewal applications ☐ Section 13.5 for registration applications ☐ Section 13.6 for amendment applications ☐ Section 13.7 for applications requiring clearing of native vegetation
13.2	All information and data used for the calculation of proposed fees has been provided in accordance with Section 13.8.	☒

13.3 Proposed works approval fee

Proposed works approval fee (see Schedule 3 of the EP Regulations)

Fees relate to the cost of the works, including all capital costs (inclusive of GST) associated with the construction and establishment of the works proposed under the works approval application. This includes, for example, costs associated with earth works, hard stands, drainage, plant hire, equipment, processing plant, relocation of equipment and labour hire.

Costs exclude:

- the cost of land
- the cost of buildings to be used for purposes unrelated to the purposes in respect of which the premises are, or will become, prescribed premises
- costs for buildings unrelated to the prescribed premises activity or activities
- consultancy fees relating to the works.

Fee component	Proposed fee
[redacted]	

13.4 **Proposed licence fee (new licences and licence renewals)**

Detailed licence fee calculations

Part 1 Premises component (see r.5D and Part 1 of Schedule 4 of the EP Regulations)

The production or design capacity should be the maximum capacity of the premises. For most categories, the production or design capacity refers to an annual rate. The figure should be based on 24 hour operation for 365 days, unless there is another regulatory approval or technical reason that restricts operation.

The premises component fee applies to the category in Part 1, Schedule 4 incurring the higher or highest amount of fee units in accordance with r.5D(2) of the EP Regulations.

List all categories (insert additional rows as required). Use only the higher or highest amount of fee units to determine the Part 1 fee component.

Category	Production or design capacity	Fee units
Using the higher or highest amount of fee units, Part 1 component subtotal		$

Part 2 Waste (see r.5D(1a)(b) and Part 2 of Schedule 4 of the EP Regulations)

If your premises includes one or more of the following categories specify any applicable Part 2 waste amounts. Do not include Part 3 waste components of these discharges in the below calculations.

Categories: 5, 6, 7, 8, 9, 12, 14, 44, 46, 53, 54A, 70, 80, or 85B

Part 2 waste means waste consisting of –

(a) tailings; or
(b) bitterns; or
(c) water to allow mining of ore; or
(d) flyash; or
(e) waste water from a desalination plant.

If the premises does not fall into one of the categories listed above, or there are no applicable Part 2 waste amounts, the sub total for this section will be $0.

Insert additional rows as required. Sum all Part 2 waste fees to determine the sub total.

Discharge quantity (tonnes/year)	Fee units
Part 2 component subtotal	$

Part 3 Waste – Discharges to air, onto land, into waters (see Part 3 of Schedule 4 of the EP Regulations)

Choose the appropriate location of the discharge and enter the discharge amount(s) in the units specified in the EP Regulations. This should be the amount of waste expected to be discharged over the next 12 months, expressed in the units and averaging period applicable for that waste kind (for example, g/minute or kg/day). Amounts can be measured, calculated, or estimated and can be based on data acquired over the previous 12 months, but should be based on the maximum premises capacity and not the forecast operating hours.

Where there are discharges, all prescribed waste types must be considered in the fee calculation. If a specified waste type is not present in the discharge, this must be justified using an appropriate emission estimation technique (for example, sampling data, industry sector guidance notes, National Pollution Inventory guides and emission factors).

Discharges to air			
Discharges to air	Discharge rate (g/min)	Discharges to air	Discharge rate (g/min)
Carbon monoxide		Nickel	
Oxides of nitrogen		Vanadium	
Sulphur oxides		Zinc	
Particulates (Total PM)		Vinyl chloride	
Volatile organic compounds		Hydrogen sulphide	
Inorganic fluoride		Benzene	
Pesticides		Carbon oxysulphide	
Aluminium		Carbon disulphide	
Arsenic		Acrylates	
Chromium		Beryllium	
Cobalt		Cadmium	
Copper		Mercury	
Lead		TDI (toluene-2, 4-di-iso-cyanate)	
Manganese		MDI (diphenyl-methane di-iso-cyanate)	
Molybdenum		Other waste	
Part 3 component subtotal		$	

Discharges onto land or into waters		Discharge rate
1. Liquid waste that can potentially deprive receiving waters of oxygen (for each kilogram discharged per day) —	(a) biochemical oxygen demand (in the absence of chemical oxygen demand limit)	
	(b) chemical oxygen demand (in the absence of total organic carbon limit)	
	(c) total organic carbon	
2. Bio-stimulants (for each kilogram discharged per day) —	(a) phosphorus	
	(b) total nitrogen	
3. Liquid waste that physically alters the characteristics of naturally occurring waters —	(a) total suspended solids (for each kilogram discharged per day)	
	(b) surfactants (for each kilogram discharged per day)	
	(c) colour alteration (for each platinum cobalt unit of colour above the ambient colour of the waters in each megalitre discharged per day)	
	(d) temperature alteration (for each 1°C above the ambient temperature of the waters in each megalitre discharged per day) — (i) in the sea south of the Tropic of Capricorn (ii) in other waters	

4. Waste that can potentially accumulate in the environment or living tissue (for each kilogram discharged per day) —	(a) aluminium	
	(b) arsenic	
	(c) cadmium	
	(d) chromium	
	(e) cobalt	
	(f) copper	
	(g) lead	
	(h) mercury	
	(i) molybdenum	
	(j) nickel	
	(k) vanadium	
	(l) zinc	
	(m) pesticides	
	(n) fish tainting wastes	
	(o) manganese	
5. *E. coli* bacteria as indicator species (in each megalitre discharged per day) —	(a) 1,000 to 5,000 organisms per 100 ml	
	(b) 5,000 to 20,000 organisms per 100 ml	
	(c) more than 20,000 organisms per 100 ml	
6. Other waste (per kilogram discharged per day) —	(a) oil and grease	
	(b) total dissolved solids	
	(c) fluoride	
	(d) iron	
	(e) total residual chlorine	
	(f) other	
Part 3 component subtotal		$
Summary – Proposed licence fee		
Part 1 Component		
Part 2 Component		
Part 3 Component		
Total proposed licence fees:		$

13.5 **Prescribed fee for registration**	
A fee of 24 units applies for an application for registration of premises, unless the occupier of the premises holds a licence in respect of the premises, in accordance with r.5B(2)(c) of the EP Regulations.	☐ (Tick to acknowledge)

13.6 **Amendment fee (works approval or licence)**	
The fee prescribed for an application for an amendment to a works approval or licence is calculated in accordance with r.5BB(1)(a) of the EP Regulations: • for a single category of prescribed premises to which the works approval or licence relates, by using the fee unit number corresponding to the prescribed premises category and relevant design capacity threshold in Schedule 4 Part 1 of the EP Regulations. • for multiple categories of prescribed premises to which the works approval or licence relates, by using the highest fee unit number corresponding to the prescribed premises categories and design capacity threshold in Schedule 4 Part 1 of the EP Regulations.	
Fee Units	Proposed fee
	$

13.7 **Prescribed fee for clearing permit**	
In accordance with the *Guideline: Industry Regulation Guide to Licensing* and *Procedure: Native vegetation clearing permits*, where approval to clear native vegetation is sought as part of an application for a works approval or licence, DWER may elect to either jointly or separately determine the clearing component of the application. Where DWER separately determines the clearing component of an application, the application will be deemed to be an application for a clearing permit under s.51E of the EP Act and processed accordingly. Note: If a clearing permit application has been separately submitted and accepted by DWER, a refund for the clearing permit application will not be provided where DWER determines to address clearing requirements as part of a related works approval application.	☐ (Tick to acknowledge)

13.8 **Information and data used to calculate proposed fees**	
The detailed calculations of fee components, including all information and data used for the calculations are to be provided as attachments to this application, labelled as **Attachment 10**, with an appropriate suffix (for example 10A, 10B etc.). Please specify the relevant attachment number in the space/s provided below.	
Proposed fee for works approval	Attachment No.
Details for cost of works	10
Proposed fee for licence	Attachment No.
Part 1: Premises	
Part 2: Waste types	
Part 3: Discharges to air, onto land, into waters	

Part 14: Commercially sensitive or confidential information

NOTE:
Information submitted as part of this application will be made publicly available. If you wish to submit commercially sensitive or confidential information, please identify the information in Attachment 11, and include a written statement of reasons why you request each item of information be kept confidential.

Information submitted later in the application process may also be made publicly available at DWER's discretion. For any commercially sensitive or confidential information, please follow the same process as described above.

DWER will take reasonable steps to protect genuinely confidential or commercially sensitive information. However, please note that DWER cannot commit to redacting all personal information from all supporting documents. You are advised to ensure that all personal information, including signatures, are removed from supporting documents prior to submitting them to the department. Please note that all submitted information may be the subject of an application for release under the *Freedom of Information Act 1992*.

	Attached	N/A
All information which you would propose to be exempt from public disclosure has been separately placed in a redacted version of the application form and its supporting documentation. Note that this is in addition to the unredacted version(s) provided to DWER for its assessment. Grounds for claiming exemption in accordance with Schedule 1 to the *Freedom of Information Act 1992* must be specified in **Attachment 11** (located at the end of this form).	☐	☒

Part 15: Submission of application	
INSTRUCTIONS: **Check one of the boxes below to nominate how you will submit your application.** **Files larger than 50MB cannot be received via email by DWER. Files larger than 50MB can be sent via File Transfer. Alternatively, email DWER to make other arrangements.**	
A full, signed, electronic copy of the application form including all attachments has been submitted via email to info@dwer.wa.gov.au; **OR**	☒
A signed, electronic copy of the application form has been submitted via email to info@dwer.wa.gov.au and attachments have been submitted via File Transfer, or electronically by other means as arranged with DWER; **OR**	☐
A full, signed hard copy has been sent to: APPLICATION SUBMISSIONS Department of Water and Environmental Regulation Locked Bag 10 Joondalup DC WA 6919	☐

Part 16: Declaration and signature

General

I / We confirm and acknowledge that:

- the information contained in this application is true and correct;
- I / we have legal authority to sign on behalf of the applicant (where authorisation provided);
- I / we have not altered the requirements and instructions set out in this application form;
- I / we have provided a valid email address in Section 2.3 for receipt of correspondence electronically via email from DWER in relation to this application;
- that successful delivery to my / our server constitutes receipt of correspondence sent electronically via email from DWER in relation to this application; and
- I / we have provided a valid postal and/or business address in Section 2.4 for the service of all Part V documents.
- giving or causing to be given information that to my knowledge is false or misleading is an offence under s.112 of the EP Act and may incur a penalty of up to $100,000.

Publication

I / We confirm and acknowledge:

- this application (including all attachments apart from the sections identified in Attachment 11) is a public document and may be published;
- marine surveys provided in accordance with Part 5 will be published and used, for the purposes of the IMSA project, in accordance with your declaration made in the *Metadata and Licensing Statement*;
- all necessary consents for the publication of information have been obtained from third parties;
- information considered exempt from public disclosure has been noted by redaction of a separately provided copy of the completed application form and its supporting documentation (in accordance with Part 14), with reasons as to why the information should be exempt in accordance with the grounds specified in Schedule 1 to the *Freedom of Information Act 1992* (WA) being provided in Attachment 11;
- subsequent information provided in relation to this application will be a public document and may be published unless written notice has been given to DWER by the applicant, at the time the information is provided, claiming that the information is considered exempt from public disclosure; and
- the decision to not publish information will be at the discretion of the CEO of DWER and will be made consistently with the provisions of the *Freedom of Information Act 1992* (WA).

[redacted]

24/9/2025.

Date

Date

NOTE: This form may be signed:

- **if the applicant is an individual, by the individual;**
- **if the applicant is a corporation, by:**
  - **the common seal being affixed in accordance with the *Corporations Act 2001* (Cth); or**
  - **two directors; or**
  - **a director and a company secretary; or**
  - **if a proprietary company has a sole director who is also the sole company secretary, by that director; and**
- **by a person with legal authority to sign on behalf of the applicant.**

ATTACHMENT 11 – Confidential or commercially sensitive information

Request for exemption from publication			
Information which you consider should not be published, on the grounds of a relevant exemption found in Schedule 1 to the *Freedom of Information Act 1992* (WA), must be specified in this Attachment. Add additional rows as required.			
NOT FOR PUBLICATION IF GROUNDS FOR EXEMPTION ARE DETERMINED TO BE ACCEPTABLE			
Section of this form:		Grounds for claiming exemption:	
Section of this form:		Grounds for claiming exemption:	
Section of this form:		Grounds for claiming exemption:	

_____

Full Name

_____ _____

Signature Date

Attachment No. 1A – Proof of Occupier Status

Not Applicable.

Attachment No. 1B – ASIC Company Extract

Not Applicable.

Attachment No. 1C – Authorisation to Act as Representative of the Occupier

Not Applicable.

Attachment No. 2 – Premises Map

Refer to the Supporting Document attached to the rear of this application.

Attachment No. 3A – Environmental Commissioning Plan

Not Applicable.

Attachment No. 3B – Proposed Activities

Refer to the Supporting Document attached to the rear of this application.

Attachment No. 3C – Map of Proposed Area to be Cleared

Not Applicable.

Attachment No. 3D – Additional Information for Clearing Assessment

Not Applicable.

Attachment No. 4 – Marine Surveys

Not Applicable.

Attachment No. 5 – Other Approvals and Consultation Documentation

Not Applicable.

Attachment No. 6A – Emissions and Discharges

Not Applicable.

Attachment No. 6B – Waste Acceptance

Refer to the Supporting Document attached to the rear of this application.

Attachment No. 7 – Siting and Location

Refer to the Supporting Document attached to the rear of this application.

Attachment No. 8 – Additional Information Submitted

Nil.

Attachment No. 9 – Category Checklist(s)

Not Applicable.

Attachment No. 10 – Application Fee

Refer to the attached DWER Fee Calculator and associated construction cost estimates.

The construction cost is estimated at [redacted] The breakdown of the construction costs has been provided below.

The input categories only relate to the proposed works and not to all of the categories on the facility licence.

It is noted that the fee calculation link in the Application Form diverts to Environment Online, which does not work.

The DWER website "*Works Approval and Licence Amendment Fee Calculator*" (https://www.wa.gov.au/government/publications/works-approval-and-licence-amendment-fee-calculator) refers to "*Amendment Application Fee Calculator (effective as of 1 July 2022)*", where there is no ability to add the construction value of the proposed work.

Amendment application fee calculator (effective as of 1 July 2022)

Instrument No.	[redacted]
Unit value ($)	

Categories	**Units**
62 - Solid waste depot: More than 5 000 tonnes per year	

Note: Amendment fee is determined by the category with the largest fee units

Fee Payable [redacted]

Henderson Green Waste Area
Bill of Quantities

Ian Watkins 11 September 2025

Item	Description	Unit	Quantity	Rate	Cost
1	**Preliminaries and General Expenses**				
1.1	Site mob/de-mob, insurances, overheads and supervision.	Item	1.00		
1.2	Insurances	Item	1		
1.3	Contractor's supervision during the execution of the Works	Item	1		
1.4	Survey information, control and setting out of the Works	Item	1		
1.5	Provision of Contractor's site facilities	Item	1		
1.6	Mobilisation of plant and equipment	Item	1		
1.7	Demobilisation of plant and equipment	Item	1		
1.8	Liaison, programming, location and protection of utilities and services	Item	1		
1.9	Traffic management	Item	1		
1.10	Maintenance of Contractor’s facilities, site and roads	Item	1		
1.11	Quality Management System establishment and administration	Item	1		
1.12	Occupational safety and health including safety and health plans and safety and health audits	Item	1		
1.13	Dust Suppression	Item	1		
1.14	Contractor's programs	Item	1		
1.15	Prepare As-Constructed Documentation	Item	1		
1.16	All charges, costs and obligations relating to Contract Conditions not provided for elsewhere	Item	1		
1.17	Other Items - Contractor to add.				
	Subtotal				
2	**Green Waste Area**				
2.1	Site clearing, including removal of vegetation, soil, rocks, unsuitable material, existing pipe culvert, fencing and gates. Stockpiled within 1 km of the Works area.	m^2	15,000.00		
2.2	Excavation and trimming to design levels below compacted limestone hardstand levels, stormwater sump, external batters, up to site boundary and access road to the east of green waste area. Excess spoil to be stockpiled within 1 km of the Works area.	m^3	24,330.63		
2.3	Extra-over for the formation of the spillway earthworks from the green waste area into the stormwater sump.	Item	1.00		
2.4	General fill to achieve design levels, excluding under green waste area. 93% MMDD. Suitable cut material used as fill or Principal supply if shortfall.	m^3	7,056.88		
2.5	Surface preparation and compaction of subgrade surface under green waste area.	m^3	3,825.00		
2.6	Engineered fill below green waste area to achieve design levels below crushed limestone layer. 95% MMDD. Suitable cut material used as fill or Principal supply if shortfall.	m^3	1,912.50		
2.7	Install 10 m x 7.5 m x 2 mm HDPE Liner spillway apron. Principal Supply Item. 7.5 m roll width, with 1 km of the Works area. Contractor to collect liner material from storage and return unused material to storage.	Item	1.00		

2.8	Construct 300 mm thick compacted limestone hardstand layer. Principal Supply limestone.	m^2	3,825.00	
2.9	Construct 200 mm thick compacted recycled asphalt hardstand layer. Principal Supply recycled asphalt.	m^2	3,825.00	
2.10	Construct stormwater diversion drains around stormwater sump.	m	65.00	
2.11	Construct compacted 0.5 m high bund along northern edge of limestone pad. 93% MMDD. Cut material used as fill.	m	15.00	
2.12	Pond and spillway lined surface preparation.	m^2	545.40	
2.13	Excavate and backfill 500 mm x 500 mm anchor trench.	m	94.00	
2.14	Install 2 mm HDPE Liner, including installer CQA testing and documentation. Quantity includes 2.0 m on top of perimeter bund and within anchor trench, but excludes overlaps and wastage. Principal Supply Item. 7.5 m roll width, with 1 km of the Works area. Contractor to collect liner material from storage and return unused material to storage.	m^2	658.40	
2.15	Install 2 mm HDPE rub sheet. 3 m wide, within anchor trench and down into the bottom of the stormwater sump, including tack welded to main liner. Principal Supply Item. 7.5 m roll width, with 1 km of the Works area. Contractor to collect liner material from storage and return unused material to storage.	Item	1.00	
2.16	Supply and install 1.8 m galvanised mesh fence around stormwater sump.	m	98.00	
2.17	Supply and install 4.0 m wide galvanised mesh gate in stormwater sump fence.	Item	1.00	
2.18	Supply and install rope safety ladder.	No.	1.00	
2.19	Supply and install concrete partition walls - precast concrete road barriers. Minimum 800 mm high. Including floor level drainage channels. 100% barriers.	m	80.00	
2.20	Supply and install 1.8 m galvanised mesh fence with three strands of barbed wire to facility southern entrance.	m	98.00	
2.21	Supply and install 12.0 m wide galvanised mesh gate with three strands of barbed wire to facility southern entrance.	Item	1.00	
2.22	Other Items - Contractor to add.			
	Subtotal			
1	**Preliminaries and General Expenses**			
2	**Green Waste Area**			
	Total - excluding contingency			
	Contingency for estimation accuracy 15%			
	Total			

Attachment No. 11 – Confidential or Commercially Sensitive Information

Nil.

HENDERSON WASTE RECOVERY PARK

920 ROCKINGHAM ROAD, WATTLEUP

GREEN WASTE AREA

WORKS APPROVAL APPLICATION SUPPORTING DOCUMENTATION

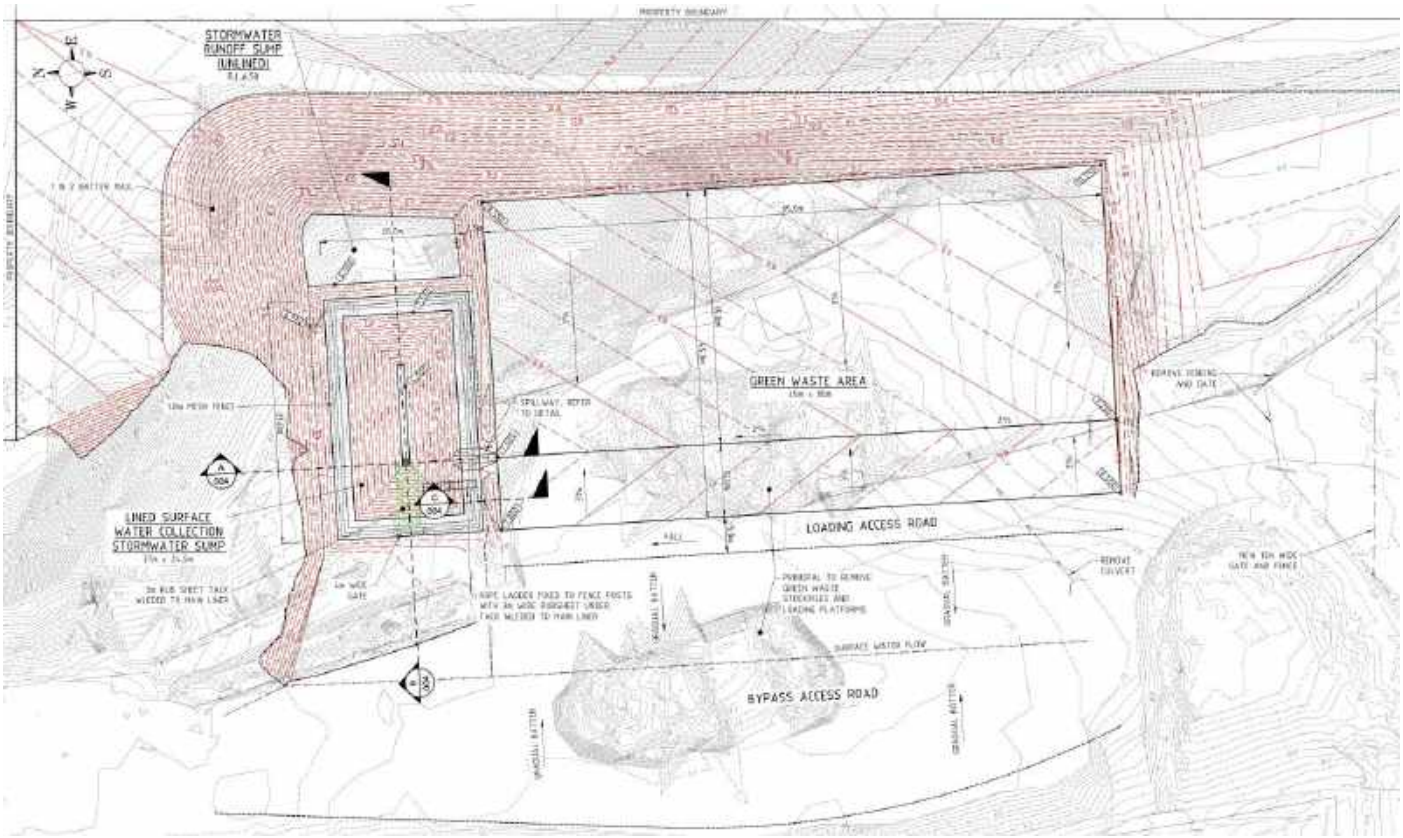

Image – Proposed Green Waste Area

Prepared for

CITY OF COCKBURN

IW Projects Pty Ltd

[redacted]

Revision: Final
Date of Issue: 19 Sep 2025

Table of Contents

Copyright and Disclaimer

1. Introduction

The City of Cockburn (City) owns and operates the Henderson Waste Recovery Park. The facility has an existing green waste receival and transfer facility, which has been in operation for a number of years. Due to the population growth within the City of Cockburn, the City proposes to upgrade this existing facility into a new, larger, more environmentally sustainable solution to manage the City's green waste and garden organics (GO) for the foreseeable future.

This document provides the supporting documentation for the Works Approval application to enable the construction and operation of the proposed new infrastructure.

2. The Proponent

The Proponent for this proposed development is the City of Cockburn:

9 Coleville Crescent
SPEARWOOD
WA 6163

3. Premises Location and Details

Property Location:

920 Rockingham Road
WATTLEUP
WA 6166

Property Descriptions:

Lot 202
Deposited Plan 60443

Lot 2
Diagram 17988

Lot 235
Deposited Plan 226117

Prescribed Premises

The Prescribed Premises boundary incorporates all three Lots and is unchanged by this application.

Appendix No. 1 – Premises Map indicates the extent of the Prescribed Premises boundary. The map has been sourced from the current facility licence.

4. Local Government Authority

The proposed development is within the City of Cockburn and the City is the Proponent.

The City has not identified any Planning related issues.

5. Ministerial Requirements

There are no Ministerial Statements or Ministerial Requirements associated with this facility.

6. Current Operations

The site is currently used for a number of waste management activities operated under licence L9159/2018/2, including the following:

- Category 61A: Solid Waste Facility – 15,000 tpa;
- Category 62: Solid Waste Depot – 40,400 tpa;
- Category 63: Class I Inert Landfill Site – 15,000 tpa, and,
- Category 64: Class II or III Putrescible Landfill Site – 200,000 tpa.

Under the above categories, the facility undertakes the following waste management activities:

- Community drop-off of recyclable items and hazardous household waste and general waste;
- Bulk and GO bin drop-off of green waste; and,
- Landfilling of up to Class III waste and the associated landfill management activities, predominantly leachate, landfill gas, litter, odour and dust management.

Of the above activities, only the bulk and GO bin green waste activities will be impacted by the proposed infrastructure development.

7. Activities and Throughput

7.1. Proposal Activities

This proposal covers development of a new bulk green and GO bin green waste facility.

The proposed activities include the following:

- Receiving accumulated green waste from the community drop-off area;
- Direct receival of bulk green waste;
- Direct receival of GO bin green waste from the City's kerbside collections; and,
- Short-term storage of accumulated green waste for subsequent offsite transfer.

7.2. Material Types and Quantity

The existing facility operating licence sets out the type and quantity of materials that can be accepted on site. This is a comprehensive list and covers all current and future requirements.

There is no proposed change to any material type or quantity from what is currently reflected in the facility licence. This proposal is simply to develop an improved facility to replace the current infrastructure. Consequently, the current licenced material type and quantity remains valid.

8. Infrastructure Design and Construction

8.1. Bulk Green Waste and GO Area

In mid-2023, the City cleaned up the southern portion of the site in preparation for the development of an extensive community drop-off, processing and transfer facilities and also for the recent construction of Leachate Pond C. As a result of these works, the previous green waste and GO handling area was relocated to the east of Cell 4. This green waste and GO area has been operating in this new location for the past two years.

The City has opted to continue to utilise this area to the east of Cell 4 as the green waste and GO handing areas and as such, proposes to develop a more formal infrastructure layout that improves the facility operation and environmental performance.

The proposed new infrastructure will include the following:

- A 85 m x 45 m compacted limestone and recycled asphalt pad for the receival, storage and transfer of green waste and GO;
- A 28 m x 15 m HDPE lined stormwater collection sump, including perimeter fencing, gate and safety rope ladder;
- Vehicle access road; and,
- Site fencing and entrance gate.

The proposed facility will be developed in the existing green waste area and also expand into an area of historical overburden stockpile, from previous limestone quarrying activities. The affected area will be reshaped to accommodate the construction of the new facility, and then 300 mm of compacted, crushed limestone and 200 mm of recycled asphalt will be used to form the new working platform on which the green waste and GO material will be handled.

The new infrastructure includes a 85 m x 45 m asphalt/limestone area for the receival, storage and load-out of green waste and GO. The compacted limestone will be 300 mm thick, with a wearing course of 200 mm of recycled asphalt on top, with the pad sloping at a gradient of 2% (1 in 50) towards a lined stormwater collection sump, to ensure that there is adequate runoff from the pad to prevent ponding and hence stagnation within the stockpiled green waste material. The stormwater sump will be 28 m x 15 m and lined with 2 mm HDPE. The HDPE material is left over from the recent Leachate Pond C construction and as such, has previously been through an extensive Construction Quality Assurance (CQA) process to confirm its suitability.

The lined stormwater sump has a storage capacity of approximately 456 m^3, excluding 500 mm of freeboard. With a catchment area of 3,825 m^2 for the pad, approximately 1,200 m^2 for the eastern and southern batters and 420 m^2 for the lined pond, there is a total catchment of approximately 5,445 m^2. Using a typical runoff coefficient of 50% (50% of the rainfall is absorbed into the green waste and surface of the asphalt/limestone pad) and 100% for the direct rainfall into the pond, the lined sump provides adequate storage to cater for approximately 155 mm of rainfall. A 1 in 20-year, 24-hour rainfall event (the typical rainfall event considered in design) has a maximum rainfall of 103 mm. Consequently, the lined stormwater sump has been designed with 50% more storage capacity than is required to cater for a typical design rainfall event.

Including the 500 mm freeboard capacity, the lined sump has a storage capacity of 645 m^3, and using the above catchment and runoff, at maximum capacity (before overflow), the lined sump can cater for approximately 220 mm of rainfall. A 1 in 100-year, 7-day event (the largest rainfall event measured by the BoM) has a maximum rainfall of 215 mm; consequently, even under the worst-case scenario, the lined stormwater sump can manage an extreme rainfall event without overflowing.

The additional sump capacity has been provided to allow for some operational flexibility such that the facility operators do not have to empty the sump immediately after a rainfall event in order to continue to provide the minimum capacity for subsequent design storm events (1 in 20-year, 24-hour rainfall event). This operational flexibility enables the facility operators time to sample and test the accumulated surface water runoff to determine whether the water is not contaminated and hence, can be used for dust suppression or irrigation of the adjacent landfill capped surface. If the runoff is contaminated, then it will be managed as leachate, and incorporated into the landfill leachate system. The operational preference being that any accumulated runoff is removed ASAP after testing, to prevent any stagnation of the accumulated water, which would simply increase the possibility of the water being deemed contaminated.

The sump has an operational depth of 3 m, plus 0.5 m freeboard. The sump invert is at RL 4.0 m AHD. The groundwater below the proposed new facilities is at approximately RL1.0m AHD (*Perth Groundwater Map*). Hence, there is a minimum of 3.0 m separation distance between the underside of the sump liner and the local groundwater.

The lined sump will be fenced, with a lockable access gate to prevent unauthorised entry into the lined sump. For safety, in the event that someone does slip into the lined sump, there is a rope ladder to enable easy egress.

The 2.00 mm HDPE liner material has previously been through an extensive CQA process and hence confirmed that the supplied liner material meets the required specification.

A specialist liner installation crew will be used that has a minimum of 100,000 m^2 relevant experience in the installation and CQA testing of similar geomembrane lining systems. In addition, during the liner installation, the Superintendent will undertake regular site visits and review the lining installer's CQA documentation and test results to confirm the works is carried out appropriately.

Appendix No. 2 – Green Waste Area Drawings provides a copy of the facility drawings.

Appendix No. 3 – Green Waste Area Construction Specification provides the specification for the proposed 2.00 mm liner.

8.2. Construction Staging and Timing

The green waste area will be constructed as a single construction exercise, with the works commencing in early 2026, following receiving environmental approval, which is anticipated to occur in late 2025.

9. Operating Methodology

9.1. Green Waste Area Operation

This new green waste area will receive the green waste from the following sources:

- City operational personnel transferring green waste from the community drop-off area in the southern portion of the site;
- Directly delivered bulk loads of green waste from the City's landscaping activities;
- Directly delivered bulk loads of green waste from commercial customers; and'
- Direct delivered GO from the City's GO kerbside collection activities.

The new green waste area located to the east of landfill Cell 4 will consist of an 85 m x 45 m x 0.3 m thick compacted limestone layer, topped with a wearing course of 0.2 m of recycled asphalt providing a total green waste pad thickness of 0.5 m. There is a lined surface water runoff sump to collect runoff from the green waste pad.

The new green waste area will be used for the accumulation of green waste that is received at the community drop-off area and relocated to the bulk green waste area by the site operations personnel. No community deliveries will be directly received at the new green waste area. Large bulk loads of green waste from City operations and commercial operators will be received directly at the new green waste area, as well as the City's kerbside GO collections.

The pad has been designed with sufficient length to enable the GO material to be received, stored and transferred from the northern portion, while the green waste will be received, stored and transferred from the southern portion of the pad (nearest the lined sump). This provides operational flexibility so that the GO material does not cross-contaminate the cleaner bulk green waste and hence, can be processed separately at the downstream composting facility.

The removal of the green waste and GO will be a function of the rate that it is accumulated within the facility. The material will be removed from site using large volume transfer vehicles; hence, there is a need for at least 70 m^3 of one of the material types to be available before a transfer vehicle will be called to site to remove the accumulated material. Typically, based on current experience, there is a need to removed material on a daily basis; however, occasionally, if waste receivals are slow, the material may stay on site for up to 72 hours.

The separate green waste and GO material will be established on the asphalt pad and occasionally pushed up to optimise the storage capacity on the pad. The facility has been located where there are existing limestone batters to the east and south of the pad to be used as retaining structures to increase the vertical storage capacity on the pad, as opposed to making the pad larger to accommodate the desired volume. Once there is sufficient green waste or GO accumulated, the material will be removed by a downstream recycler (currently Remondis GO Organics).

The operation of the new green waste facility will be similar to the current green waste operation, with the only difference being the capture of surface water runoff into a lined stormwater sump.

The lined stormwater sump will accumulate surface water runoff from the recycled asphalt/limestone pad. With the 2% fall on the pad, the surface water, including any rainwater that percolates through the piles of green waste, will flow into the lined sump and not pond on the recycled asphalt surface: hence, reducing potential water stagnation and subsequent contamination within the stored material.

The accumulated stormwater will be sampled and tested and then compared against the *Australian & New Zealand Guidelines for Fresh & Marine Water Quality* to determine the subsequent water manage methodology, with the most likely potential contamination indicator will be the biological oxygen demand (BOD). Uncontaminated water (BOD lower than guideline levels) will be used to irrigate capped landfill surface to sustain vegetation growth or used for dust suppression around the site, and contaminated water (BOD higher than guideline levels) will be treated as leachate and moved to one of the on-site leachate ponds. Due to the limited anticipated surface water runoff, the City will utilise the site water cart to removed water from the sump.

9.2. Temporary Green Waste Area During Construction

During the construction of the new green waste area, the current green waste and GO activities will be temporarily relocated to the southeastern portion of the site, onto an area of historical inert waste disposal. There is a single residential house approximately 200 m to the southeast and another approximately 230 m to the northeast.

Immediately following the completion of the construction of the new green waste facility and the submission of the Environmental Compliance Report, the green waste and GO operations will be again relocated back to the new facility.

Appendix No. 4 – Temporary Green Waste Area provides the location where the current green waste activity will be temporarily relocated during the construction of the new facility.

10. Commissioning

There are no commissioning requirements for the proposed infrastructure.

11. Time Limited Operations

Time Limited Operations are required to enable the new facilities to be immediately utilised, to enable the temporary green waste and GO operation to be shut down and the new, improved green waste area used as soon as practical.

Time Limited Operations will also be required to enable the facilities to be operated while the Works Approval Compliance Documentation and subsequent Licence Amendment are being processed by the DWER.

Although the proposed new facility simply replacing the current facility and there being no new waste management activities, the existing licence conditions relating to green waste only cover green waste activities within the recently constructed community drop-off area. Consequently, there will need to be some new conditions relating to the operation of the new bulk green waste facility included in the Time Limited Operations allowance.

12. Rights to Water Irrigation Act 1914

There is no requirement for groundwater usage and hence no consequential impact of the *Rights to Water Irrigation Act 1914*.

13. Stakeholder and Community Consultation

There has been no formal stakeholder and community consultation associated with the project.

Due to the fact that the proposed new infrastructure simply replaces existing, aged infrastructure, that there are no new activities being proposed, and there are no additional waste types or quantities involved, it has not been deemed necessary to undertake formal stakeholder and community consultation.

In addition, as part of the Works Approval process, the DWER advertises the proposed Works Approval, and the public is given the opportunity to provide comment.

14. Emissions

14.1. Emissions Sources

The primary emission source is the possible impact of contaminated surface water negatively affecting groundwater from the green waste and GO handling. To this end, the facility design includes a sloping compacted limestone and recycled asphalt pad for green waste and GO management and a lined stormwater collection sump to contain any runoff.

With the green waste and GO being removed daily, and with a maximum 72-hour storage duration for some material, there is minimal opportunity for the material to generate excessive odour. There is no mulching or other processing of the accumulated material; hence, there will be no dust or noise emissions from the new facility.

Effectively, the new facility will be operated in the identical manner and in the same location as the current activity. The current activity does not cause any community emission concerns, and it is anticipated that this will continue with the new facility.

14.2. Air Emissions

There are no air emissions associated with the proposed infrastructure development or subsequent operation.

14.3. Dust Emissions

During construction, there may be some minor dust emissions associated with the earthworks.

Composition and Quantity – During construction, the dust will be composed predominantly of silica particles from the earthworks operations. The quantity will be insignificant.

Variability of Emissions – Minimal dust emissions and hence, minimal variability in emissions.

Treatment Methodology – Dust suppressions during construction using water cart or hoses in the work areas. During operations, there will be no dust suppression required.

Monitoring – Visual observation by site operations staff. Monitoring community complaints.

Contingency Plans – If dust is a problem during construction, additional dust suppression will be applied by more regular use of the water cart or hoses. In the extreme event that dust is not able to be appropriately managed, the dust generating activity will be ceased until weather conditions improve. During operation, if dust is a concern, then the water cart will be used to spray the green waste and GO stockpiles before the material is loaded into the transfer trailers.

Environmental Receptors – Environmental receptors include the site operations staff, customers and neighbouring/surrounding properties.

Fugitive Emissions – All emissions are deemed fugitive.

Cumulative Impact – There is an adjacent landfill on site, which could add to potential dust emissions. Due to the scale of the proposed activities, any dust emissions would be insignificant in comparison to the other adjacent existing activities and hence can effectively be ignored as a cumulative impact on the greater site operations.

Targets and Limits – No dust emissions beyond the site boundary.

Environmental Risk – Nil.

14.4. Odour Emissions

With a maximum of 72-hours storage of any green waste or GO, no odour sources have been identified:

Composition and Quantity – Nil.

Variability of Emissions – Nil.

Treatment Methodology – Nil.

Monitoring – Olfactory observation by site operations staff. Monitoring community complaints.

Contingency Plans – In the event that odour is identified, immediately remove waste material from site.

Environmental Receptors – In the event that odour is identified, environmental receptors include the site operations staff, customers and neighbouring/surrounding properties.

Fugitive Emissions – All emissions are deemed fugitive.

Cumulative Impact – In the event that odour is identified, there is an adjacent landfill on site, which would add to potential odour emissions. Due to the scale of the proposed activities, any odour emissions would be insignificant in comparison to the adjacent landfill activities and hence can effectively be ignored as a cumulative impact on the greater site operations.

Targets and Limits – Nil.

Environmental Risk – Nil.

14.5. Noise Emissions

Noise management is to be considered during the construction and operation of the facility. The *Environmental Protection (Noise) Regulations* have restrictions on noise emissions during the period 7.00 pm to 7.00 am, Monday to Saturday. Beyond this time restriction, normal noise regulations apply.

The facility typically operates between 7.30 am and 4.00 pm on weekdays, with occasional small delivers being received from the community drop-off area over the weekends. Hence, all operations, other than Sunday, occur outside the noise restricted times. Sunday activities will be minor and only be the unloading of a hook-lift bin of green waste from the community drop-off area, which is not a noisy activity. The nearest sensitive receptor is the residential property immediately to the north; hence, noise emission control is an important aspect to manage appropriately.

All activities on site are to be carried out in accordance with the *Environmental Protection (Noise) Regulations 1997*.

No noise sources have been identified:

Composition and Quantity – Nil.

Variability of Emissions – Nil.

Treatment Methodology – Nil.

Monitoring – Nil, but by third-party specialist if noise concerns are raised as being a potential problem by the local community.

Contingency Plans – In the event that noise is identified, cease noisy operations if excessive noise is generated. Determine an alternative means of handling the waste material. This is a highly unlikely scenario, as the current operation does not result in any noise emissions and the future activities will be identical.

Environmental Receptors – In the event that noise is identified, environmental receptors include the site operations staff, customers and neighbouring/surrounding properties.

Fugitive Emissions – All emissions are deemed fugitive.

Cumulative Impact – In the event that noise is identified, there is an adjacent landfill, which would add to potential noise emissions. Due to the scale of the proposed activities, any noise emissions would be insignificant in comparison to the other adjacent existing activities and hence can effectively be ignored as a cumulative impact on the greater site operations.

Targets and Limits – As defined by the *Environmental Protection (Noise) Regulations 1997* and nil complaints.

Environmental Risk – The environmental risk on site and to neighbouring properties is considered to be extremely low.

14.6. Light Emissions

There is no security lighting associated with the proposed development.

14.7. Discharge to Water

There will be no discharge to water.

Composition and Quantity – Nil.

Variability of Emissions – Nil.

Treatment Methodology – Nil.

Monitoring – Nil.

Contingency Plans – Nil.

Environmental Receptors – Nil.

Cumulative Impact – Nil

Targets and Limits – Not Applicable.

Environmental Risk – Nil.

14.8. Discharge to Land

There will be no discharge to land.

Composition and Quantity – Nil.

Variability of Emissions – Nil.

Treatment Methodology – Nil.

Monitoring – Nil.

Contingency Plans – Nil.

Environmental Receptors – Nil.

Cumulative Impact – Nil

Targets and Limits – Not Applicable.

Environmental Risk – Nil.

15. Complaints Management System

The Proponent maintains a Complaints Register on site and records all complaints received, including:

- Complainant name and contact number (if provided);
- Date and time of the complaint;
- Complete details of the complaint and any other concerns or other issues;
- Complete details and dates of any actions taken to investigate or respond to any complaints.

The site is located within the Latitude 32 Industrial Zone and the Proponent has been on site since early 1990. The facility has received occasional complaints associated with landfill operations, none of these have been attributed to the activities associated with the green waste operations.

Due to the proposed infrastructure development and the associated activities simply replacing the existing green waste activities, and in the same location on site, it is not anticipated that there will be any increased adverse impact on the surrounding community that would result in additional complaints being generated.

16. Vegetation Clearing

The new facility is being developed in an area on site that has traditionally been used for overburden storage and was originally cleared of native vegetation as part of the original limestone extraction operations.

There are some small trees and shrubs that will be removed as part of the reshaping of the immediate areas; however, there are regrowth plant species on the overburden stockpiles and cut slopes.

17. Flora and Fauna

The site is an active landfill and waste management site within a larger industrial area. The site has previously been cleared for limestone extraction and subsequent waste management activities.

18. Fire Management

18.1. On Site Fire Management

The Potential Fire Sources include:

- Spontaneous combustion within green waste stockpiles (due to heat buildup).

Management Measures include:

- Daily removal of accumulated material, with a maximum of 72-hours of material stockpiling;
- During operating hours operations staff will immediately take action to extinguish any fires;
- The site has existing firefighting capacity, including water cart, fire hydrants, hose reels and fire extinguishers; and,
- The Cockburn Central Fire Station is located at 870 North Lake Road, Cockburn Central and is 12 km from the site and can respond to a fire within 15 minutes of being called out.

There is a low risk of fire associated with the management of the proposed facility and the activities are currently occurring on site, in the same location and the same activities, without fires being a significant issue.

19. Solid/Liquid Waste

This section deals with the quantities of solid and liquid waste being generated within the proposed new infrastructure, not the material that is being delivered to site.

19.1. Solid Waste

There is no solid waste generated as a result of the proposed activities.

Composition and Quantity – Not applicable.

Variability of Emissions – Not applicable.

Treatment Method – Not applicable.

Controlled Waste Tracking – Not applicable.

Contingency Plans – Not applicable.

Environmental Receptors – Not applicable.

Comparison Against Relevant Standards – Not applicable.

Cumulative Impact – Not applicable.

Waste Reuse – Not applicable.

Environmental Risk - Not applicable.

19.2. Liquid Waste

The liquid waste generated as a result of the proposed activities will be potential contaminated surface water runoff from the new green waste area. This liquid will be directed to the lined stormwater sump. The accumulated stormwater will be sampled and tested and compared against the *Australian & New Zealand Guidelines for Fresh & Marine Water Quality* to determine how best to manage the water. Uncontaminated water will be used for dust suppression on site or to irrigate the capped landfill surface to promote vegetation growth, and contaminated water will be treated as leachate and pumped into one of the on-site leachate ponds.

Composition and Quantity – The contamination will be a function of the type and quantity of green waste and GO being stored in the green waste area. Being clean green waste, there will be only organic contaminants within the surface water runoff, the primary contaminant indicator being biological oxygen demand (BOD).

The volume of accumulated surface water runoff will be a function of rainfall intensity and the quantity and type of green waste being stored within the facility. Light rain will be absorbed within the green waste and the upper surface of the recycled asphalt pad, resulting in no surface water runoff to the lined sump. More intense rainfall will result in surface water runoff, with the volume being a function of the rainfall intensity and the volume of material being stored on the pad.

The lined stormwater sump has a storage capacity of approximately 456 m^3, excluding 500 mm of freeboard. With a catchment area of 3,825 m^2 for the pad, approximately 1,200 m^2 for the eastern and southern batters and 420 m^2 for the lined pond, there is a total catchment of approximately 5,445 m^2. Using a typical runoff coefficient of 50% (50% of the rainfall is absorbed into the green waste and surface of the asphalt/limestone pad) and 100% for the direct rainfall into the pond, the lined sump provides adequate storage to cater for approximately 155 mm of rainfall. A 1 in 20-year, 24-hour rainfall event (the typical rainfall event considered in design) has a maximum rainfall of 103 mm. Consequently, the lined stormwater sump has been designed with 50% more storage capacity than is required to cater for a typical design rainfall event.

Including the 500 mm freeboard capacity, the lined sump has a storage capacity of 645 m^3, and using the above catchment and runoff, at maximum capacity (before overflow), the lined sump can cater for approximately 220 mm of rainfall. A 1 in 100-year, 7-day event (the largest rainfall event measured by the BoM) has a maximum rainfall of 215 mm; consequently, even under the worst-case scenario, the lined stormwater sump can manage an extreme rainfall event without overflowing.

The additional sump capacity has been provided to allow for some operational flexibility such that the facility operators do not have to empty the sump immediately after a rainfall event in order to continue to provide the minimum capacity for subsequent design storm events (1 in 20-year, 24-hour rainfall event). This operational flexibility enables the facility operators time to sample and test the accumulated surface water runoff to determine whether the water is not contaminated and hence, can be used for dust suppression or irrigation of the adjacent landfill capped surface.

If the runoff is contaminated, then it will be managed as leachate, and incorporated into the landfill leachate system. The operational preference being that any accumulated runoff is removed ASAP after testing, to prevent any stagnation of the accumulated water, which would simply increase the possibility of the water being deemed contaminated.

The sump has an operational depth of 3 m, plus 0.5 m freeboard. The sump invert is at RL 4.0 m AHD. The groundwater below the proposed new facilities is at approximately RL1.0m AHD (*Perth Groundwater Map*). Hence, there is a minimum of 3.0 m separation distance between the underside of the sump liner and the local groundwater.

Variability of Emissions – The emissions variability will be a function of rainfall intensity and the quantity of stored green waste.

Treatment Method – Dust suppression or landfill capping irrigation for uncontaminated surface water runoff and treated as leachate for contaminated surface water runoff.

Controlled Waste Tracking – No applicable, as the liquid waste will be managed internally and not be removed from site.

Contingency Plans – The lined sump has been designed with significantly larger capacity than is typically required for a 1 in 20-year, 24-hour rainfall event (composting guideline design requirement). In addition to this increased sump capacity, the sump will be operated with a minimum 500 mm freeboard to prevent overflow.

Environmental Receptors – Local groundwater.

Comparison Against Relevant Standards – There is no green waste design guideline. As a comparison, the DWER composing guidelines provide design parameters for surface water collection. As described above, the facility design includes a greater storage capacity than required by this guideline.

Cumulative Impact – Nil.

Waste Reuse – Dust suppression or irrigation of uncontaminated surface water runoff onto the adjacent landfill capped surface to sustain vegetation growth.

Environmental Risk – Percolation of contaminated surface water runoff into the local groundwater. This is managed by the sloping, 500 mm thick compacted limestone and recycled asphalt pad and the lined sump.

19.3. Spill Management

Large capacity lined sump provides significant operational flexibility to manage accumulated surface water runoff, and the sump 500 mm freeboard prevents overflow.

20. Hydrocarbon/Chemical Storage

20.1. Hydrocarbon Storage

Quantity and Type – There will be no bulk hydrocarbon storage associated with the proposed activities.

20.2. Chemical Storage

Quantity and Type – There will be chemical storage associated with the proposed activities.

21. Contaminated Site Identification

A check of the DWER Contaminated Sites Database indicates that the site is not registered as a contaminated site.

22. Surface Water Management

The surface water around the new green waste facility is directed away from the operational pad to prevent uncontaminated surface water from flowing onto the pad. The bulk of the surface water will be generated from the vehicle access road, which has been designed to enable the surface water to flow to the north, away from the green waste area and the adjacent landfill Cell 4. In addition, the natural soils in this area (and across the site) consist of predominantly sand and limestone; hence, there is significant direct infiltration of rainfall and minimal surface water generation.

23. Groundwater Management

The new proposed facility incorporates a free draining green waste management area to prevent ponding and subsequent stockpile stagnation and a lined sump in the new bulk green waste area. These infrastructure improvements reduce the possibility of contaminated surface water runoff and hence, improved groundwater protection.

The site has an existing groundwater monitoring system. The proposed infrastructure development occurs within the groundwater monitoring bore network and hence, there is no requirement to amend any of the existing site groundwater monitoring bores or monitoring methodology.

24. Risk Assessment

This risk assessment relies on relevant information that has been provided in the above documentation and identifies the potential source, pathway and impact to receptors in accordance with the *Guidance Statement: Risk Assessments* (DER February 2017).

For there to be a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

24.1. Source-Pathway and Receptors

24.1.1. Emissions and Controls

Possible emissions and associated likely pathways of transmission have been identified along with proposed controls.

Emissions and controls associated with existing site activities are managed in accordance with existing facility licence conditions and have not been included in this assessment, other than where there has been a change to a current waste management activity or there is considered to be a cumulative impact associated with the proposed construction works and subsequent operation of the new infrastructure.

Table 1 – Emissions and Controls provides a summary of the potential emissions from the proposed construction activities and subsequent operation of the associated infrastructure and the controls to manage the identified emissions.

Table 1 – Emissions and Controls

Emission	Source	Potential Pathway	Proposed Control
Dust	Dust generated during construction – Minimal emissions associated with the earthworks activities	Air/windborne pathway	Water cart and hoses wetting down affected areas
	Dust generated during operation of the new infrastructure: Handling of green waste within the new green waste area	Air/windborne pathway	Minimal emissions identified, none that will go beyond the immediate area surrounding the green waste activities. Same operation for the new facility as currently occurs for the existing facility, which does not generate noticeable dust Water cart and/or hoses wetting down affected areas and material stockpiles
Noise	Noise generated during construction – Minimal emissions associated vehicle movements	Air/windborne pathway	Low vehicle speed Low frequency reversing beacons (croaker type)
	Noise generated during	Air/windborne	No emission identified

Emission	Source	Potential Pathway	Proposed Control
	operation of the new infrastructure	pathway	No controls required during operation
Odour	Odour generated during construction	Air/windborne pathway	No emission identified No controls required during construction
	Odour generated during operation of the new infrastructure	Air/windborne pathway	No emission identified due to maximum 72-hours storage of accumulated materials Same operation for the new facility as currently occurs for the existing facility, which does not generate noticeable odours No controls required during operation
Seepage and Spillage	Seepage and spillage during construction	Seepage and spillage to soils and groundwater	No emission identified No controls required during construction
	Seepage and spillage during operation of the new infrastructure	Seepage and spillage to soils and groundwater	Asphalt/limestone operational area Sloping operational area to prevent ponding and stagnation within green waste stockpiles, flow directed to HDPE lined sump Surface water diversion away from green waste area Regular removal of accumulated green waste material
Wind-blown Waste - Litter	Associated with proposed construction activities	Air/windborne pathway	No emission identified No controls required during construction
	Associated with proposed operational activities	Air/windborne pathway	No emission identified No controls required during operation
Fire/Smoke	Fire in green waste area	Air/windborne pathway	Regular removal of green waste materials reduces the possibility of heat build-up in the stockpiles material resulting in spontaneous combustion Available water supply for firefighting purposes (from onsite groundwater bores) Existing site firefighting infrastructure and capability for rapid fire response Fire brigade in close proximity
Fire debris and washwaters	Firefighting activities during construction - None identified	Seepage to soils and groundwater	No emission identified No controls required during construction
	Firefighting activities during operation - Fire	Seepage to soils and	Potential for fires in the green waste area. All firefighting debris and washwater will

Emission	Source	Potential Pathway	Proposed Control
	in the green waste area and subsequent firefighting water runoff	groundwater	end up in the lined sump where it will be captured. The extent of retention within the sump will be a function of whether and the extent to which the sump liner is impacted by the fire.

24.1.2. Receptors

With the site being an existing waste management facility and hence having been through previous Licence Amendments/Works Approvals and the associated assessments, the site receptors are well established.

Employees, visitors and contractors on site have not been included in the list of receptors, as these parties are considered as being associated with the proposed development and hence, protected by site operating procedures, management strategies and relevant State legislation.

Table 2 – Receptors provides a comprehensive summary of the human and environmental receptors surrounding the site (*source DWER Amendment Report for Licence L9159/2018/2, dated 28 January 2025 and available public data*).

Table 2 – Receptors

Human Receptor	Distance
Nearest residential premises	Adjoining Premises boundary and property boundary Property boundary 40 m north of the lined stormwater sump House 120 m northeast of the lined stormwater sump
Nearest commercial premises (future development)	Approximately 20 m north of the Premises boundary 220 m northwest of the lined stormwater sump
Environmental Receptor	**Distance from Prescribed Activity**
Groundwater	Groundwater 3 m below the HDPE lined stormwater sump – groundwater at approximate RL 1 m AHD, sump invert at RL 4 m AHD Groundwater 6 m below the underside of the green waste pad crushed limestone layer (RL 7 m AHD)
Beneficial groundwater users	Local groundwater flow direction is inferred to be in the south-west direction. 12 in-force groundwater abstraction licenses are located within a 500 m radius of the premises, with abstraction solely from the Perth Superficial aquifer. Uses for abstracted groundwater include irrigation for market guiding and turf farming,

Human Receptor	Distance
	dust suppression for industrial purposes and domestic use.
PIWI Act Groundwater Areas	The premises is within the proclaimed Cockburn Groundwater Area
Bush Forever Site 346	Approximately 150 m west of the Premises boundary
Threatened and Priority Ecological Communities (TEC/PEC)	Several located within 200 m of the Premises boundary
Threatened Fauna	Identified surrounding the premises indicating that native vegetation may be providing habitat
DBCA Legislative Tenure	Conservation Park located approximately 200 m west of the Premises boundary
Regional Parks	Beeliar Regional Park located approximately 150 m west of the Premises boundary
Geomorphic Wetlands – Swan Coastal Plan (Management)	Brownman Swamp – approximately 320 m west of the Premises boundary. Lake Mount Brown – approximately 525 m south of the Premises boundary

24.1.3. Risk Ratings

Risk ratings have been assessed in accordance with the *Guidance Statement: Risk Assessments* (DER February 2017) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages. Where linkages are in-complete they have not been considered further in the risk assessment.

Table 3 - Risk Rating Matrix

Likelihood	Consequence				
	Slight	Minor	Moderate	Major	Severe
Almost certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

Table 4 – Risk Ratings

Risk Event				Risk Rating
Source/Activity	**Potential Emission**	**Potential Pathway and Impact**	**Receptor**	**C = Consequence L = Likelihood**
Construction activities				
Construction	Dust	Air/windborne pathway causing impacts to health and amenity	Single residential premises immediately adjacent to the Premises, with the house 120 m northeast of new facility	C = Slight L = Rare **Low Risk** Lowest possible risk – likely zero
			Future commercial premises 20 m from the Premises boundary and 220 m northwest of new facility	C = Slight L = Rare **Low Risk** Lowest possible risk – likely zero
	Noise	Air/windborne pathway causing impacts to health and amenity	Single residential premises immediately adjacent to the Premises, with the house 120 m northeast of new facility	C = Slight L = Rare **Low Risk** Lowest possible risk – likely zero
			Future commercial premises 20 m from the Premises boundary and 220 m northwest of new facility	C = Slight L = Rare **Low Risk** Lowest possible risk – likely zero
Operations				
Waste Handling	Dust	Air/windborne pathway causing impacts to health and amenity	Single residential premises immediately adjacent to the Premises, with the house 120 m northeast of new facility	C = Slight L = Rare **Low Risk** Lowest possible risk – likely zero
			Future commercial premises 20 m from the Premises boundary and 220 m northwest of new	C = Slight L = Rare **Low Risk** Lowest possible risk

Risk Event				Risk Rating
Source/Activity	**Potential Emission**	**Potential Pathway and Impact**	**Receptor**	**C = Consequence L = Likelihood**
			facility	– likely zero
	Noise	No emission identified		
	Odour	No emission identified		
	Wind-blown waste	No emission identified		
	Seepage and Spillage	Seepage to soils causing impacts to groundwater	Local groundwater users, groundwater dependent wetlands	C = Slight L = Unlikely **Low Risk**
	Fire/Smoke	Air/windborne pathway causing impacts to health and amenity	Single residential premises immediately adjacent to the Premises, with the house 120 m northeast of new facility	C = Possible L = Minor **Medium Risk**
			Future commercial premises 20 m from the Premises boundary and 220 m northwest of new facility	C = Possible L = Minor **Medium Risk**
	Fire debris and washwater	Seepage to soils causing impacts to groundwater	Local groundwater users, groundwater dependent wetlands	C = Slight L = Unlikely **Low Risk**

Appendices

Appendix No. 1 – Premises Map

Appendix No. 2 – Green Waste Area Drawings

Appendix No. 3 – Green Waste Area Construction Specification

Appendix No. 4 – Temporary Green Waste Area

Appendix No. 1 – Premises Map

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Schedule 1: Maps

Premises map

The Premises is shown in the map below. The blue line depicts the Premises boundary.

Figure 1: Prescribed premises boundary

Appendix No. 2 – Green Waste Area Drawings

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CITY OF COCKBURN

HENDERSON LANDFILL
PROPOSED GREEN WASTE AREA

LOCALITY PLAN
NOT TO SCALE

DRAWING SCHEDULE

DRAWING No.	REVISION	DESCRIPTION
HWG - 001	C	COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN
HWG - 002	C	OVERALL LAYOUT PLAN
HWG - 003	C	GENERAL WORKS LAYOUT PLAN
HWG - 004	C	SECTIONS
HWG - 005	C	DETAILS
HWG - 006	C	ACCESS ROAD GRADING

ISSUED FOR APPROVAL
17 SEPTEMBER 2025

REVISIONS

No.	BY	DATE	DESCRIPTION
C	S.B.Y.	17/09/25	SAFETY/DIVERSION BUND ADDED
B	S.B.Y.	12/09/25	ISSUED FOR APPROVAL
A	S.B.Y.	25/08/25	ISSUED FOR APPROVAL

		DATE
DRG. FILE		DATE
DESIGN	I.W.	08/25
DRAWN	S.B.Y.	08/25
DES. CHK.	I.W.	
DWG. CHK.	I.W.	

TECHNICALLY APPROVED:

iw Projects
Email –
Mobile –
Address –
[redacted]

CITY OF COCKBURN

HENDERSON LANDFILL
PROPOSED GREEN WASTE AREA
COVER SHEET, DRG. SCHEDULE AND LOCALITY PLAN

SCALE	AS SHOWN
SHEET	
REVISION	C
DRG No.	HGW–001

N

W E

S

PROPERTY BOUNDARY

LINED SURFACE WATER
COLLECTION SUMP
24.5m x 37m

20.0m

40.0m

25.0m

10.0m

STORMWATER RUNOFF
SUMP (UNLINED)
R.L.6.50

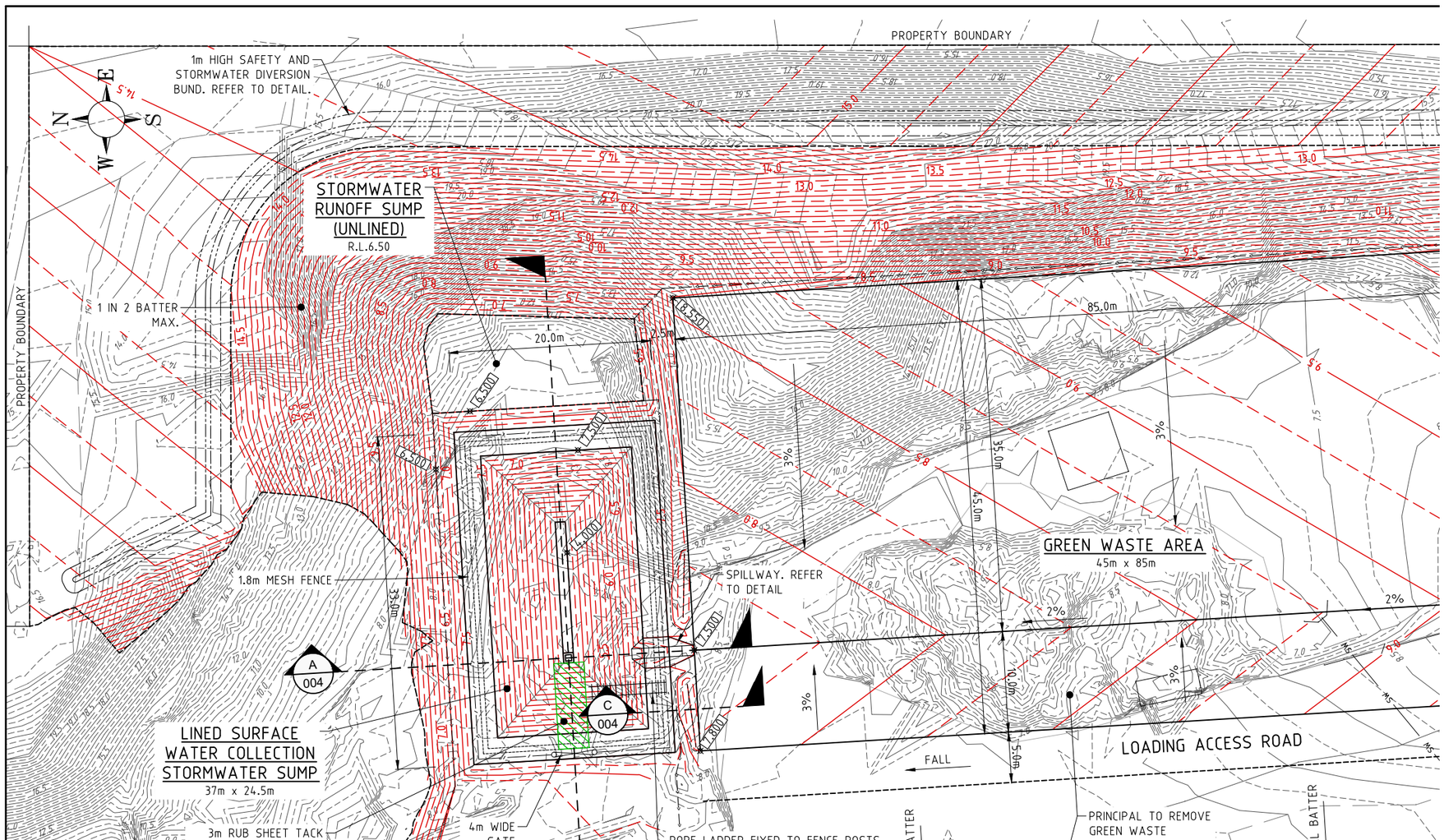
REMOVE OVERBURDEN
TO NATURAL GROUND

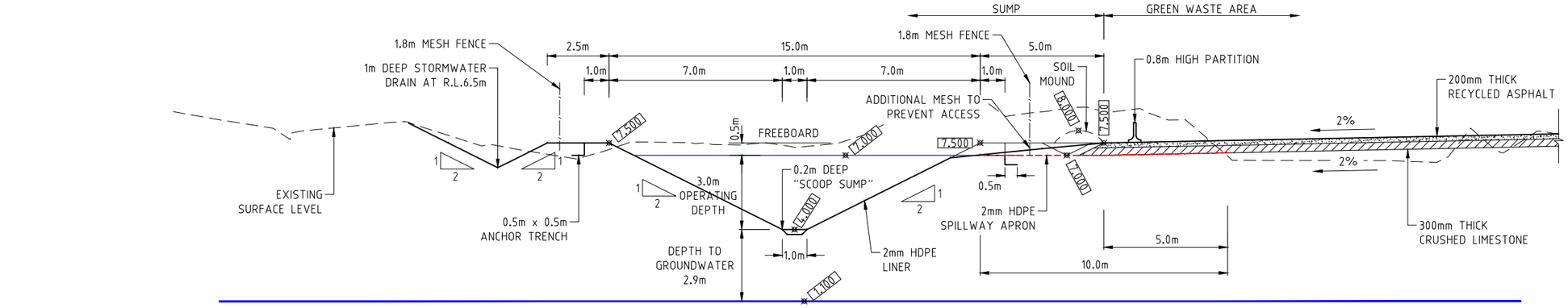
CELL 4
LANDFILL

PRINCIPAL TO REMOVE
EXISTING GREEN WASTE
STOCKPILES AND
LOADING PLATFORMS

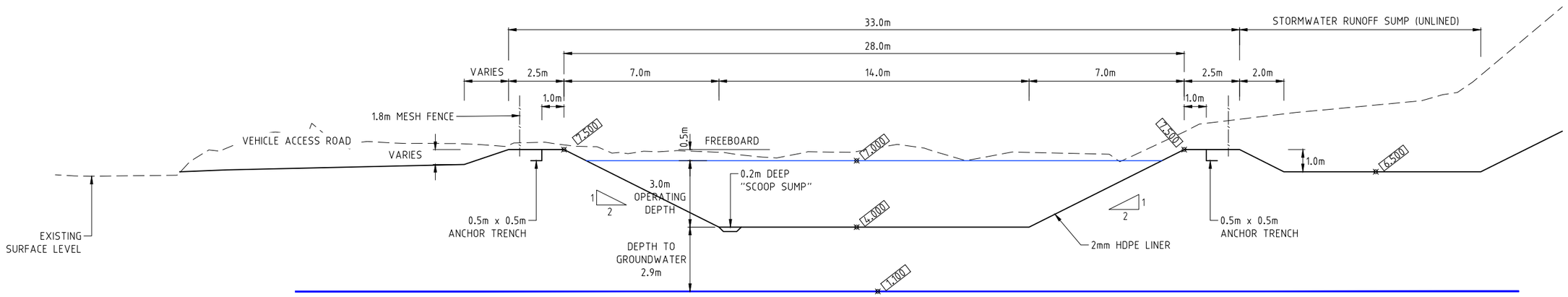
GREEN WASTE AREA
45m x 85m

PROPERTY BOUNDARY

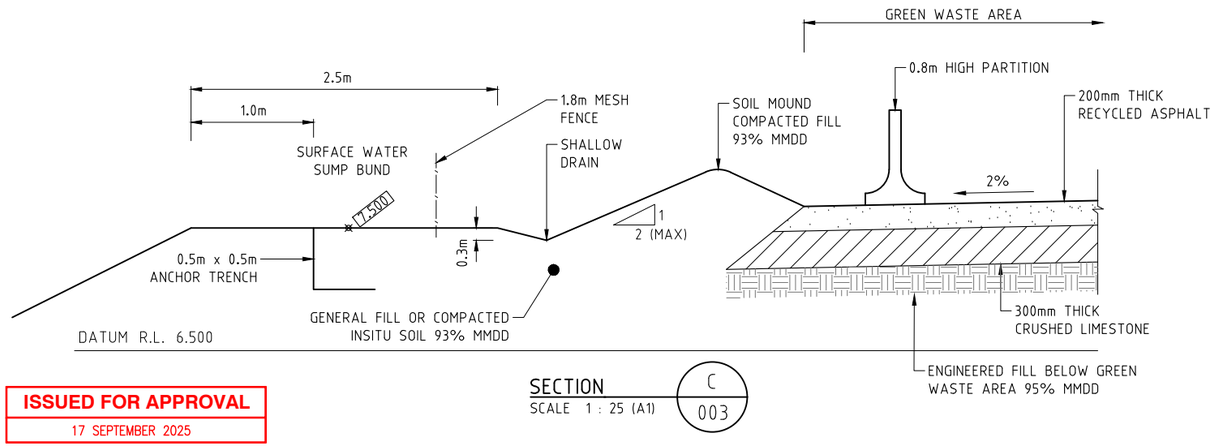

PROPERTY BOUNDARY
1m HIGH SAFETY AND STORMWATER DIVERSION BUND. REFER TO DETAIL.
E
N
S
W
STORMWATER RUNOFF SUMP (UNLINED)
R.L.6.50
1 IN 2 BATTER MAX.
PROPERTY BOUNDARY
20.0m
15.500
7.500
6.200
4.000
1.800
1.8m MESH FENCE
33.0m
SPILLWAY. REFER TO DETAIL
3%
85.0m
35.0m
45.0m
GREEN WASTE AREA
45m x 85m
2%
2%
3%
10.0m
5.0m
A
004
C
004
LINED SURFACE WATER COLLECTION STORMWATER SUMP
37m x 24.5m
FALL
LOADING ACCESS ROAD
3m RUB SHEET TACK
4m WIDE
PRINCIPAL TO REMOVE GREEN WASTE



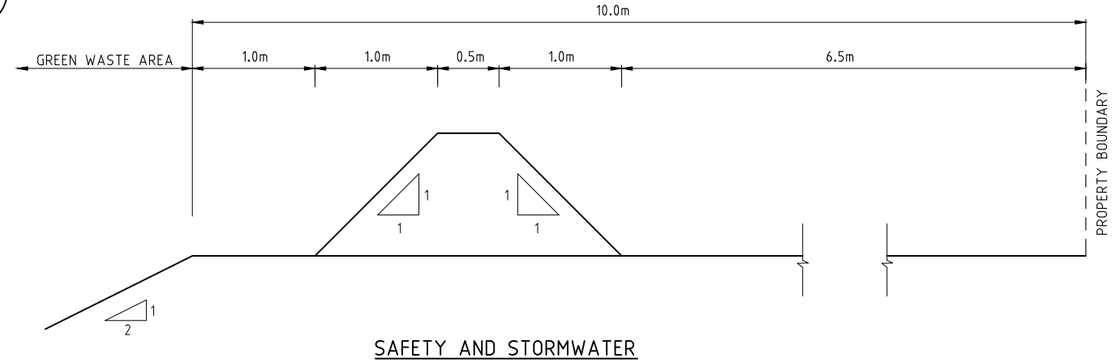
SECTION A
SCALE 1 : 100 (A1)



SECTION B
SCALE 1 : 100 (A1)



SECTION C
SCALE 1 : 25 (A1)



SAFETY AND STORMWATER DIVERSION BUND DETAIL
SCALE 1 : 25 (A1)

SCALE 1:25 @ A1 — SCALE 1:50 @ A3

SCALE 1:100 @ A1 — SCALE 1:200 @ A3

ISSUED FOR APPROVAL
17 SEPTEMBER 2025

REVISIONS				
No.	BY	DATE	DESCRIPTION	
C	S.B.Y.	17/09/25	SAFETY/DIVERSION BUND ADDED	
B	S.B.Y.	12/09/25	ISSUED FOR APPROVAL	
A	S.B.Y.	25/08/25	ISSUED FOR APPROVAL	

DRG. FILE		DATE
DESIGN	I.W.	08/25
DRAWN	S.B.Y.	08/25
DES. CHK.	I.W.	
DWG. CHK.	I.W.	

TECHNICALLY APPROVED:

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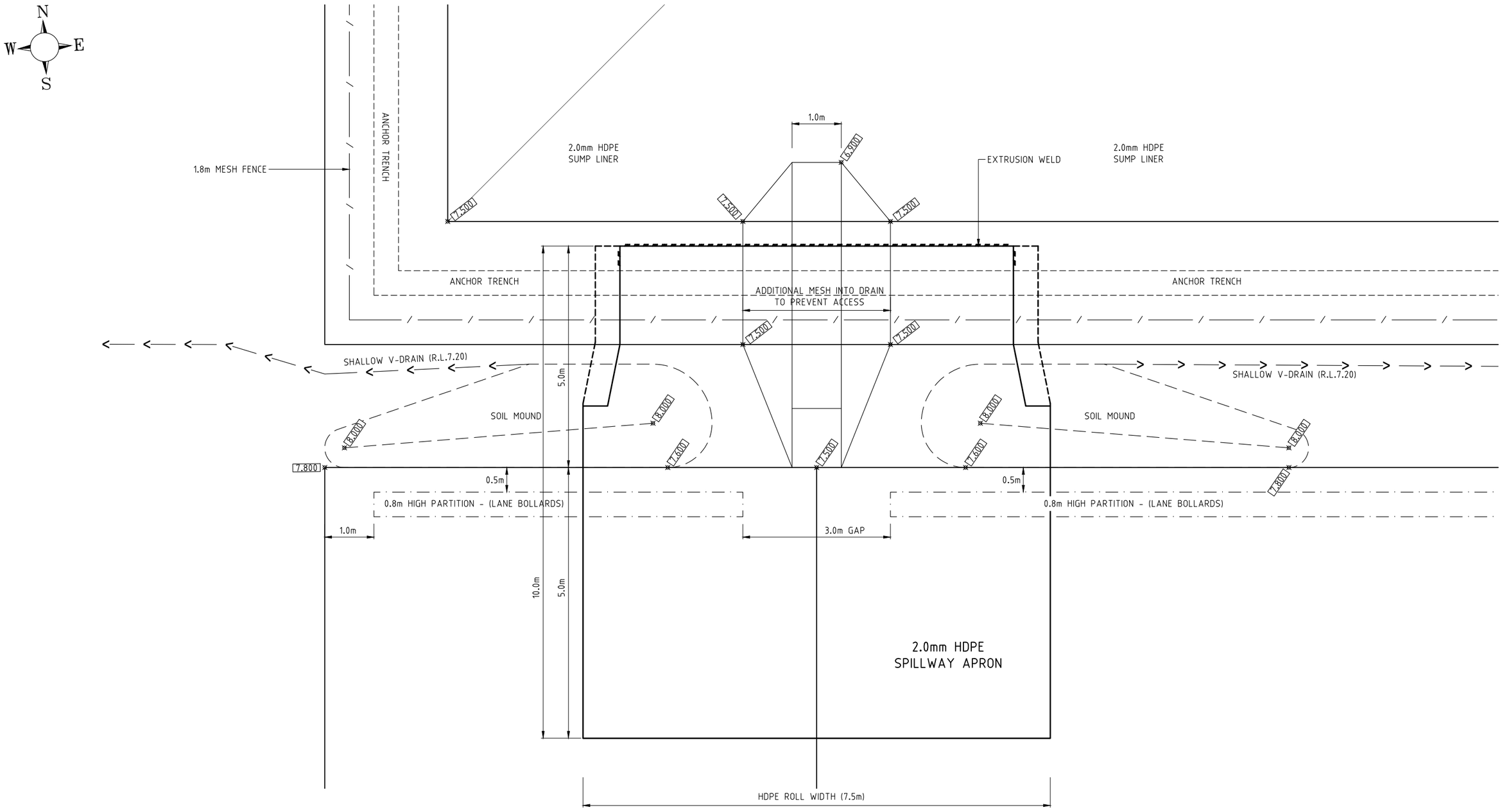
CITY OF COCKBURN

HENDERSON LANDFILL
PROPOSED GREEN WASTE AREA
SECTIONS

SCALE	AS SHOWN
SHEET	
REVISION	C
DRG No.	HGW–004



SPILLWAY DETAIL - PLAN

NOT TO SCALE

ISSUED FOR APPROVAL

17 SEPTEMBER 2025

REVISIONS							
					DRG. FILE		DATE
C	S.BY.	17/09/25	SAFETY/DIVERSION BUND ADDED		DESIGN	I.W.	08/25
B	S.BY.	12/09/25	ISSUED FOR APPROVAL		DRAWN	S.B.Y.	08/25
A	S.BY.	25/08/25	ISSUED FOR APPROVAL		DES. CHK.	I.W.	
No.	BY	DATE	DESCRIPTION		DWG. CHK.	I.W.	

TECHNICALLY APPROVED:

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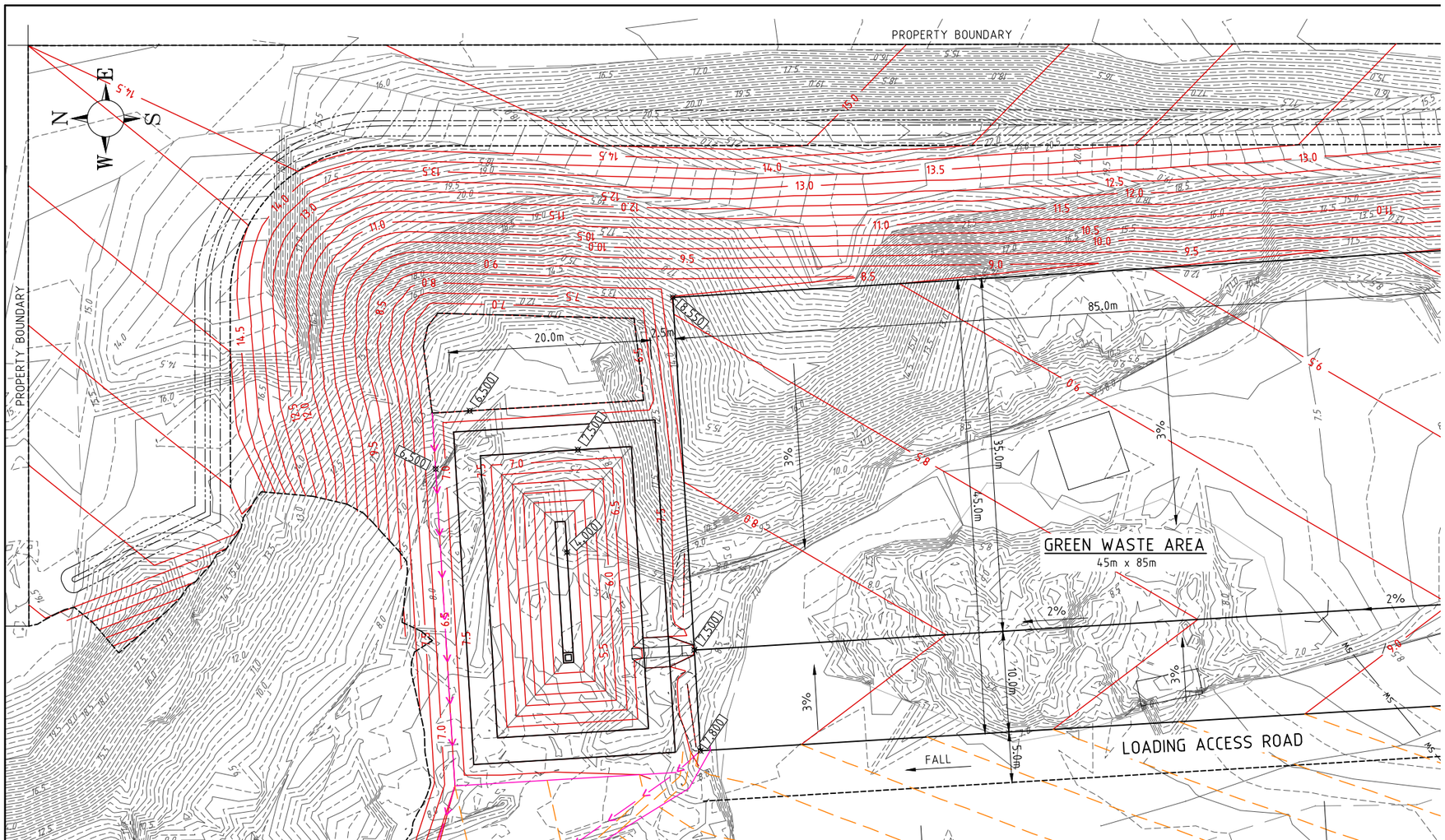
CITY OF COCKBURN

HENDERSON LANDFILL
PROPOSED GREEN WASTE AREA
DETAILS

SCALE	AS SHOWN
SHEET	
DRG No.	REVISION C HGW–005


PROPERTY BOUNDARY
PROPERTY BOUNDARY
N
S
E
W
20.0m
15.500
17.500
7.000
4.000
17.500
17.800
85.0m
35.0m
45.0m
10.0m
5.0m
3%
3%
3%
2%
2%
GREEN WASTE AREA
45m x 85m
LOADING ACCESS ROAD
FALL

Appendix No. 3 – Green Waste Area Construction Specification

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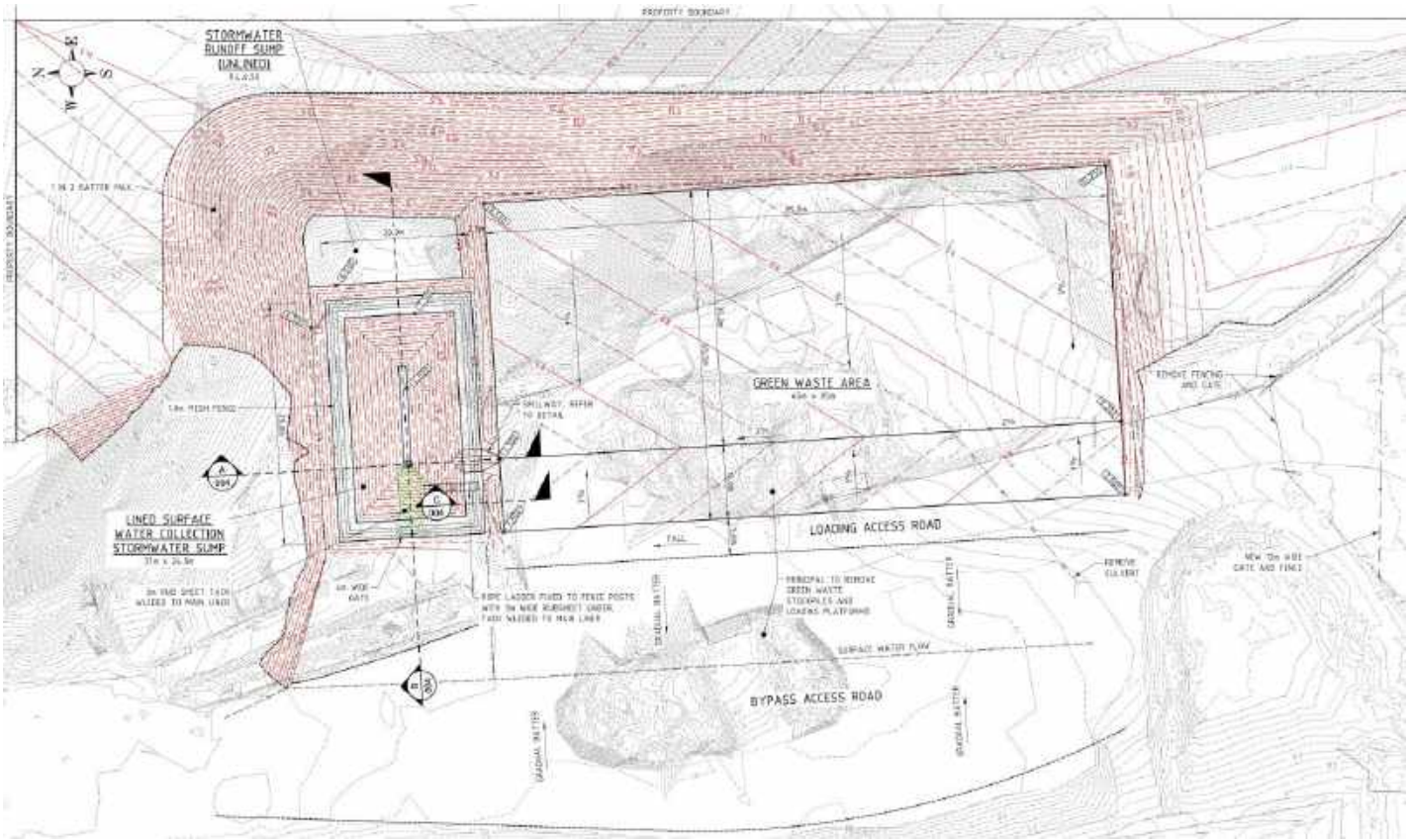
HENDERSON WASTE RECOVERY PARK

GREEN WASTE AREA

CONSTRUCTION SPECIFICATION



Prepared for

CITY OF COCKBURN

IW Projects Pty Ltd

[redacted]

Revision: Final
Date of Issue: 9 Sep 2025

Table of Contents

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1 Specification

1.1 Description of Works

The Contract includes all management, operations, labour, plant, materials (other than Principal Supply Items), supervision, survey and all else required for the construction and completion of the whole of the Works described in these Specifications and shown on the Drawings, and for complying with the Conditions of Contract, together with any additional Works or variations (if any) ordered by the Superintendent.

The scope of Works includes:

- Survey and setting out;
- Removal of fencing and gate;
- Vegetation clearing (including trees);
- Removal of a pipe culvert;
- Excavation to design levels;
- Subgrade preparation;
- Placement of Fill Material:
    - General fill;
    - Engineering Fill;
    - Compacted limestone;
    - Compacted recycled asphalt;
- Lining of a stormwater sump, including rub sheet and spillway apron;
- Fencing and gate around stormwater sump;
- Safety ladder;
- Fencing and gate at facility entrance;
- Such other Works as shown on the Drawings or as described in these Specification;
- Control and diversion of surface water and run-off from within the Works and surrounding areas; and,
- Provision of "As-Constructed" Drawings and Documentation.

1.2 Principal Supply Items

The Principal shall supply the following items:

- Construction water;
- All general and engineered fill material (typically reused cut material);
- Crushed limestone;
- Recycled asphalt; and,
- Synthetic geomembrane stormwater sump lining material (2.0 mm HDPE), including rub sheet, spillway apron and welding rods.

The Contractor is to determine the quantity of Principal Supplied Items and provide the Principal with a minimum of seven days' notice of the required quantity prior to being required for incorporation within the Works.

The Principal Supply Items will be handed over to the Contractor on site. The Contractor is to fully inspect the Principal Supply Items and once inspected, sign off on a handover certificate confirming the acceptability of the material and where relevant, documenting any identified unsuitability with the material for which the Principal is liable.

The Contractor is to not be unduly wasteful when using the Principal Supply Items.

1.3 Quality Assurance, Inspection and Reporting

The Contractor shall undertake and cover the cost of all Construction Quality Control testing and measurement required in these Specifications to demonstrate that the specified standards of construction have been achieved.

The Principal shall appoint and pay for a Superintendent to manage the project on its behalf.

The Principal may be the Superintendent.

1.4 Contract Limits

The Works limits shall be in accordance with the Drawings.

1.5 Areas Available to the Contractor

On written request, the Superintendent will allocate work, storage and laydown areas for use by the Contractor.

1.6 Contractor's Facilities

The Contractor shall be responsible for the supply of its own Site services, including power, potable water, wastewater and communications. The proposed details of the Contractor's power, potable water and sanitation arrangements shall be submitted to the Superintendent for approval and shall be maintained by the Contractor throughout the Works.

Waste and refuse of all sorts will be regularly and satisfactorily removed. On completion of the Works all sanitary facilities will be removed, the ground thoroughly disinfected, and the Site restored to its original condition.

1.7 Pollution and Spillage

Without limiting the Contractor's obligations under the Contract, it shall be the Contractor's responsibility to:

- Investigate and comply with all applicable laws;
- Investigate and comply with Regulations and Rules relating to pollution and contamination with particular regard to the water discharging off the Site; and,
- Limit airborne dust and noise, which could cause a hazard or nuisance to other persons or property. The Superintendent may require the Contractor to take additional steps to reduce the dust hazard and any steps taken shall be at the Contractor's cost.

During construction and commissioning, spillage of any type whatsoever, including fabricating and hydraulic oils, fuel and any other material, shall be immediately removed and disposed of, and the area cleaned as directed by the Superintendent.

1.8 Hours of Site Work

Normal hours of Works on the project will be:

- Monday to Saturday (inclusive) – 07.00 to 17.00.

Should the Contractor require to work outside these hours, the Contractor shall submit a request in writing to the Superintendent, stating the reason and working hours required, 24 hours in advance and, in any event, not later than noon. The Superintendent will not refuse a reasonable request.

For the purpose of variations and extensions of time, the Contract shall consist of 10 hours per working day. The Contract Sum shall be deemed to include all additional costs incurred resulting from compliance with industrial awards.

The Contractor will be required to work outside normal working hours to attend to emergency situations or as directed by the Principal to attend to items within the scope of the Contract.

Any variation to the above will be at the discretion of the Superintendent and subject to prior written approval. Refusal to vary or extend the hours of work will not be grounds for an extension of time or a direction to accelerate the Works.

1.9 Site Meetings/Briefings

The Contractor must attend Site meetings/briefings with the Principal and/or Superintendent at times, which will be notified to the Contractor. The Contractor must ensure the attendance of all sub-contractors directly concerned with the Works in progress at the time. The Superintendent will keep records of these meetings and these records will form part of the Contract Documentation. No claims for costs borne by the Contractor in attending Site meetings will be accepted.

1.10 Remedial Work During Defects Liability Period

The Contractor shall be responsible to perform Works during the Defects Liability Period in accordance with the General Conditions of Contract.

1.11 Water for use in the Works

Water for moisture conditioning of compacted fill and dust suppression will be available on Site from a standpipe within 1 km of the Works area.

1.12 Setting Out and Measurement of Quantities

The Contractor shall be responsible for setting out the Works and confirming survey control to the Superintendent to the grades and levels shown on the Drawings.

Where necessary, the Contractor shall be responsible for the measurement of quantities under the Contract. Quantities shall be determined by a competent person by field survey, and outcomes of the survey and quantity calculations shall be forwarded to the Superintendent for verification.

The Contractor is to use a suitably qualified surveyor for all survey work. A suitably qualified surveyor includes:

- A qualified and experienced surveyor able to be a fulltime member of the Institution of Mining and Engineering Surveyors Australia; or,
- A surveyor licensed under the WA Licensing Board.

Quantities to be measured for variations must be measured in accordance with AS 1181.

1.13 Weather

Upon application by the Contractor, an extension to the Contract completion date may be granted for Works halted due to wet weather outside the normal prevailing weather patterns. Such extension and the equivalent length thereof shall be at the discretion of the Superintendent. All applications are to be received within two days of the event occurring. Wet weather-related extensions of time will be considered by the Superintendent and if granted will NOT entitle the Contractor to claim any time related costs associated with the extension of time. For avoidance of doubt, there will only be an extension of time and not a change to the Contract Sum.

This clause does not release the Contractor from any obligation to weatherproof and protect the Works, and to remove water from the Works as soon as is practical during and after inclement weather.

1.14 Liaison with Others

During the course of the Works, the Contractor will need to interact with other activities occurring on Site. It shall be the Contractor's responsibility to closely liaise with others on Site to ensure Works are completed in accordance with the requirements of the Specification, Drawings and the Superintendent's directions and instructions.

1.15 Provision for Traffic

When Works are proceeding adjacent to or on any existing access track or haul road, the Contractor shall notify the Superintendent and any other company using that access track or haul road seven days in advance of the date that such Works are due to commence and the proposed duration of such Works and take all steps necessary during the execution of such Works to ensure that disruption to normal traffic is minimised.

1.16 Hold Points

During construction, there will be a number of Hold Points, at which the Superintendent will inspect and approve the relevant portion of the Works.

The following is a list of Hold Points. These are to be seen as minimum Hold Point requirements. Additional inspections during the construction phase may be required at the Superintendent's discretion or as identified in subsequent Inspection and Testing Plans (ITP's):

- When soft ground is encountered;
- When hard rock is encountered;
- Following excavation, preparation and compaction of all subgrade earthworks;
- Following construction of the General Fill layer Works;
- Following construction of the Engineered Fill layer Works;

- Lined surface preparation prior to liner installation;
- Completion of sump lining;
- Completion of spillway lining;
- Completion of limestone layer Works; and,
- Completion of recycled asphalt layer Works.

The Contractor is to provide a minimum of 48 hour's (working days) notification to the Superintendent of when a Hold Point will be achieved.

The Contractor shall be deemed to have allowed for all time delays and costs associated with the Hold Points during the works.

1.17 Fence and Gate Removal

The Contractor will be required to remove existing fencing and gates from within the Works area.

Where instructed by the Superintendent, this fencing and gates are to be carefully removed and stockpiled, for reuse or recycling, in an area within 1 km of the Works.

1.18 Vegetation Clearing

The Contractor is to remove all vegetation from the Works area. This typically consists of weeds, small shrubs and a variety of different sized trees.

All trees are to be cut up into maximum 500 mm size particles.

The cleared vegetation is to be stockpiled in the temporary green waste area as advised by the Superintendent, within 1 km of the works area.

1.19 Culvert Removal

The Contractor is to remove the existing piped culvert from the Works area.

The removed materials are to be stockpiled within 1 km of the Works area, as advised by the Superintendent.

1.20 Residual Green Waste Removal

The Principal will remove all residual green waste and the existing steel loadout structures prior to the commencement of the Construction Works.

1.21 Demobilisation

Prior to the issue of a Certificate of Practical Completion, the Contractor shall, unless otherwise agreed in writing by the Superintendent, have removed all goods and temporary Works from the Site.

All Contractor lay down areas shall be cleaned and graded by the Contractor to the satisfaction of the Superintendent.

1.22 Earthworks

1.22.1 Introduction

The Works covered by this Section include, but are not necessarily limited to, the following:

- Survey and setting out;
- Removal of Unsuitable Material;
- Excavation to Design Levels;
- Subgrade and lined surface preparation;
- Placement of Fill Material:
    - General Fill
    - Engineered Fill;
    - Crushed limestone; and,
    - Recycled asphalt.
- Construction Quality Control testing and sampling;
- Control and diversion of surface water and run-off from within the Works and surrounding areas; and,
- Provision of "As-Constructed" Drawings and Documentation.

All earthworks shall be carried out in accordance with the applicable Main Road Specification and where relevant, AS 3798-2007, *Guidelines of Earthworks for Commercial and Residential Development*.

1.22.2 Earthworks Inspection

The Superintendent will inspect, approve and report on all aspects of the earthworks. This is to include:

- Approval of the suitability of the fill material used;
- Approval of the suitability of excavations to remove soft and unsuitable material from the Works;
- Approval of the compaction method used;
- Inspection of all fill placement and compaction activities;
- Assessment of the Construction Quality Control testing results and As-Constructed survey;
- Approval of the earthworks quality and shape; and,
- Any other activities that are deemed necessary to ensure that appropriate earthworks standard of workmanship and quality of Works is achieved.

1.22.3 Applicable Documents

All Works shall be carried out in accordance with the latest editions of all and any specifications, guidelines and standards referenced with the Contract.

1.22.4 Handover Survey

On handover of the Site to the Contractor, the Contractor is to undertake a detailed base survey of the Works area. As a minimum, the surface shall be surveyed about the perimeter of the Works area and on a maximum 10 m grid within the perimeter. The survey is to identify all necessary details to accurately determine the surface topography for the purposes of measuring construction levels and qualities. A drone survey may be utilised, provided the survey picks up adequate detail.

The results of the survey shall be provided to the Superintendent prior to any Works commencing. This base survey will be compared to the Principal's base survey (which may have been undertaken prior to Site handover) and the handover base survey profile will be agreed between the Parties.

This agreed handover base survey will be used for calculating levels and quantities of Works undertaken throughout the project.

No Works shall be undertaken in any area until the handover base survey has been agreed between the Parties and without the written confirmation of the Superintendent.

If required, vegetation clearing can occur prior to the survey works being undertaken.

1.22.5 Excavation

1.22.5.1 General

The Contractor shall carry out all earthworks excavation to the extent shown on the Drawings or directed by the Superintendent. The Contractor is responsible for assessing the soil/rock types on Site and selecting suitable plant and equipment for undertaking excavation Works.

The Contractor is to remove all soft or unsuitable material down to firm natural ground, as approved by the Superintendent, prior to any backfill commencing.

All completed earthworks are to be inspected and approved by the Superintendent.

It is the responsibility of the Contractor to determine the appropriate equipment to undertake the task after conducting an assessment of the soil/rock type on the site. The foundation level cut to the design level shall be brought to the attention of the Superintendent for inspection.

The Contractor bears the liability for all Latent Conditions as described in the Contract, including all sub-surface conditions.

Any over excavation will need to be back filled, compacted, tested and thereafter inspected by the Superintendent for approval.

1.22.5.2 Excavated Material

Suitable excavated material is to be used as fill material.

The Superintendent will determine the suitability of the excavated material for use as fill.

Excess excavated material not used as fill material or being deemed by the Superintendent as unsuitable material, will be stockpiled separately, within 1 km of the Works area in a location as directed by the Superintendent.

The Contractor is to form and maintain material stockpiles as directed by the Superintendent.

1.22.5.3 Hard Rock

The Contractor is responsible for assessing the extent, if any, of hard rock on Site and is to have included in its program of Works and Contract Sum for all likelihood of encountering hard rock.

Sub-surface conditions will not be grounds for a Variation to the Contract.

1.22.5.4 Soft Ground

The removal and reinstatement of any areas of soft ground within the Works, down to a maximum depth of 1 m below the existing ground level shall be the responsibility of the Contractor and at the Contractor's own expense. Soft ground shall be removed and disposed of within 1 km of the Works area in a location as directed by the Superintendent. The soft ground stockpile shall be protected from erosion using appropriate slopes. If soft ground is encountered, the subgrade is to be shaped by cutting into natural material and re-engineered using locally sourced material to the specified design level.

The Contractor's limit of exposure with regards to the removal and reinstatement of soft ground is limited to a maximum depth of 1 m below the existing ground level. Any removal and reinstatement of soft ground below 1 m shall be dealt with as a variation to the Contract.

1.22.5.5 Groundwater Management

Due to the shallow extent of the excavation, no groundwater is anticipated to be encountered during the Works.

1.22.6 Fill Materials

1.22.6.1 General

The Contractor shall carry out all earthworks fill to the extent shown on the Drawings or as directed by the Superintendent. The Contractor is responsible for assessing the quantity of fill required in the Works and the Principal is responsible for the provision of suitable fill material. The quantity of engineered and general fill is to include the suitable excavated materials, with the Principal making up the shortfall in material quantities.

The Contractor is responsible for selecting suitable plant and equipment for undertaking the required Works.

All fill material must be approved for use by the Superintendent, who may reject unsuitable material.

1.22.6.2 Material

All fill material will be sourced from excavated materials, existing on-site stockpiles or other locations as determined by the Superintendent. All fill material will be a Principal Supply item, including in the event that the Principal opts to source fill material from off-site sources.

The source of on–site stockpiled fill will be within 1 km of the Works area.

Two types of fill material will be utilised within the Works:

- General fill – for filling from the cleared existing ground level to design levels, excluding earthworks below the green waste area; and,
- Engineered fill - for filling from the cleared existing ground level to design level (bottom of compacted limestone layer) below the green waste area.

General and Engineered fill material will comply with *Main Roads Western Australia (MRWA) Specification 501 – Pavements*.

Any soils testing that may be required to confirm fill material suitability for the particular application will be carried out by the Superintendent.

1.22.6.3 Unsuitable Material

The term "unsuitable material" shall apply to weak deposits and organic material, which, because of its inherent nature, cannot be satisfactorily reconditioned and is not suitable as a foundation material.

Unsuitable material shall be removed within the limits specified by the Superintendent using whatever equipment is required. All material that is deemed unsuitable by the Superintendent for use as fill will be stockpiled within 1 km of the Works area in a location as directed by the Superintendent.

1.22.7 Foundation Preparation

On completion of excavation, all standing water shall be drained or pumped away before foundation preparation can commence.

The foundation of the Works shall be excavated and graded to the lines and levels as indicated in the Drawings. On the completion of grading, the entire prepared surface area shall be thoroughly wetted and rolled to achieve the specified compaction.

The completed surface shall be surveyed about the perimeter of the area and on a maximum 10 m grid within the perimeter. The results of the survey shall be provided to the Superintendent prior to inspecting the foundation to confirm the Works meets the specified requirements.

No fill shall be placed in any area without the written approval of the Superintendent.

1.22.8 Fill Placement and Compaction

1.22.8.1 Inspection

Before fill is placed in any area, the Superintendent shall be notified in writing 48-hours prior to Works commencing. In addition to the Proof Rolling requirements, the Superintendent may inspect the area to confirm the Works conforms to the Specifications.

1.22.8.2 General Placement and Compaction Standards

As applicable, all fill material is to be placed and compacted in accordance with *Main Roads Western Australia (MRWA) Specification 501 – Pavements*.

In addition, all fill material shall be;

- Placed, levelled, moisture conditioned:
  - General fill material to -3% to +2% of Standard Optimum Moisture Content (SOMC) determined in accordance with AS 1289 5.4.1;
  - Engineered fill material to +/-2% of Standard Optimum Moisture Content (SOMC) determined in accordance with AS 1289 5.4.1;
- Compacted:
  - Subgrade prepared surface to not less than a minimum dry density ratio of 93% relative to modified compaction as determined in accordance with AS 1289 5.2.1;
  - General fill to not less than a minimum dry density ratio of 93% relative to modified compaction as determined in accordance with AS 1289 5.2.1;
  - Engineered fill to not less than a minimum dry density ratio of 95% relative to modified compaction as determined in accordance with AS 1289 5.2.1;
  - Compacted limestone fill to not less than a minimum dry density ratio of 95% relative to modified compaction as determined in accordance with AS 1289 5.2.1;
  - Recycled asphalt to not less than a minimum dry density ratio of 95% relative to modified compaction as determined in accordance with AS 1289 5.2.1 or as determined by the Superintendent;
- Green waste area to achieve a California Bearing Ratio (CBR) of not less that 15% (soaked) in accordance with AS 1289 6.1.1; and,
- All areas of fill are to be compacted in layers of no greater than 250 mm or less than 100 mm. Where less than 100 mm is required to be worked, the underlying material shall be scarified to such a depth that the resulting thickness of the layer to the Works is greater than 100 mm. Subject to Superintendent approval of the compaction methodology, the 300 mm compacted limestone layer may be installed as a single layer.

The Contractor is to determine the type and suitability of the construction equipment and methodology utilised to achieve the required compaction standard.

Each layer worked shall be generally parallel to the finished surface and shall, where practicable, extend to the full width of the fill in that particular level. The Contractor shall at all times prevent ponding of water on the fill.

The Contractor shall perform survey as part of its Quality Assurance to demonstrate that the compacted layer thickness and the completed fill levels comply with the requirements of this Specification.

Testing shall be carried out to demonstrate the compliance of the layer with the moisture content, density ratio and CBR requirements of this Specification as soon as practicable after compaction. It is the responsibility of the Contractor to coordinate with the testing authority to ensure that this requirement for the scope and time of testing is met at all times during the construction of the Works.

An effective bond shall be created between successive layers. Prior to placement of each layer, the surface of the previous layer shall be lightly scarified, and moisture conditioned if necessary to bond the layers and to prevent laminations at the layer interfaces. If laminations occur, either between or within layers, the area shall be reworked at the Contractor's expense to remove any laminations or defects.

The integrity of each layer shall be maintained by the Contractor. This includes limiting traffic movements on completed Works and prevention of disturbance, excessive wetting, erosion and desiccation cracking. Each layer of compacted material shall be maintained within the moisture tolerances specified between the completion of rolling the layer and the placement of the overlying layer. Should the layer be disturbed, excessively wetted, eroded, desiccated or cracked, as determined by the Superintendent, then the Contractor shall rework the layer at its own expense to the satisfaction of the Superintendent and retested. If disturbance, wetting, erosion or cracking extends into lower layers of the compacted fill material, then the lower layers shall also be reworked.

Trafficked sections are to be ripped, moisture conditioned and re-compacted to the specified requirements if, in the opinion of Superintendent, these areas have deteriorated.

The Contractor may propose an alternative fill placement and compaction methodology to the Superintendent for review and possible acceptance; however, the Contractor is to ensure that any proposed methodology is able to achieve the minimum compaction densities as required with the Specification.

1.22.8.3 Non-Conforming Fill

Should inspection or testing of the fill material indicate that a layer is not in accordance with the Specification, then the Superintendent will direct the Contractor to rework the area at the Contractor's own expense. If the layer still does not conform to the requirements of the Specification after reworking, the Contractor, at its own expense, shall remove the material to an approved designated area to potentially be mixed and moisture re-conditioned.

1.22.8.4 Compaction Testing

The Contractor shall arrange for the sampling and testing of compacted subgrade and fill. Fill operations shall be interrupted as necessary to allow the recovery of samples or to carry out control tests on the fill.

All compaction testing shall be undertaken by a laboratory that is NATA accredited for those tests being undertaken. Testing will be used to confirm specified moisture conditions and standards of compaction are achieved. All testing shall be undertaken in accordance with the appropriate sections of *AS1289 – Methods for Testing Soils for Engineering Purposes*.

Sampling and testing will be undertaken at regular intervals by the Contractor or its nominated representatives. The construction programing and Contract Sum shall include allowances for taking and testing samples and time delays while samples are being collected and tested.

No additional payment will be made for any completed Works requiring removal and/or repair as a result of any tests organised by the Superintendent.

Inspection and testing shall be carried out in accordance with the requirements of this Specification.

The frequency of field density testing during these Works shall not be less than the following:

- One test per 75 m^3 distributed evenly throughout the full depth and area;
- One test per layer per material type per 150 m^2, distributed evenly over the surface of the layer;
- One test per layer or per 250 mm thickness per 50 m length constructed horizontal layer;
- Three tests per visit when material is placed in horizontal layers; or,
- Whichever frequency is greater of the above or alternative frequencies that may be agreed with the Superintendent.

Field density tests shall be determined by Nuclear Densometer methods (AS1289.5.8.1) in association with modified compaction (AS1289.5.2.1).

Nuclear densometer methods are used, compaction shall be carried out in accordance with the Assigned Values Method, as defined by AS1289.5.4.2.

If any areas of the Works are found to be non-compliant with the compaction requirements of this Specification, they shall be re-worked (if necessary), re-compacted and re-tested for compliance.

1.22.8.5 Dimensions and Tolerances

The finished levels of fill shall be within -20 mm and +20 mm of the design levels. The finished levels are still required to attain the minimum falls stated in the Drawings. The fill surface shall be inspected to ensure accuracy and any irregularities corrected prior to the surface treatment being applied.

1.22.8.6 Control of Water

During excavation and construction, all areas of earthworks shall be kept free of surface water and groundwater by temporary drains or other means. Surface water shall be prevented from flowing onto the excavations or fill areas by the construction of diversion drains or other suitable mechanisms before any other excavation commences. Excavation and fill areas shall always be graded to facilitate surface drainage and any loose material compacted to prevent absorption. Particular care shall be taken to ensure that surface water does not reach fill material that has yet to be compacted.

1.22.8.7 Surface Confirmation

The completed surface shall be surveyed by the Contractor on a grid suitable to conform the accuracy of the constructed Works. The survey is also to include calculations of the falls as indicated in the Drawings. The results of the survey shall be provided to the Superintendent prior to inspecting the completed surface to confirm the Works meets the specified requirements.

1.22.8.8 Clean-up

On completion of the Works the Site shall be cleared of all materials and debris. Any damage shall be made good, and the Site restored to a neat and tidy condition. All Works areas shall be smoothed and graded conforming to the natural appearance of the landscape. Where destruction, scarring, damage or defacing has occurred as a result of the operations, repairing, replanting, reseeding, or other correction measures shall be undertaken to the satisfaction of the Superintendent.

1.23 Installation of Geomembrane Liner

1.23.1 General

The construction Works incorporates the use of a smooth/textured HDPE product installed on top of the prepared earthworks surface, with the textured side down.

1.23.1.1 Geomembrane Installation Sub-Contractor

The Contractor shall only engage the specialist liner sub-contractor, which may be the main Contractor to install the geomembrane that was accepted by the Principal at the time of award of Contract. Any change to the liner sub-contractor must be approved in writing by the Superintendent prior to any lining Works being undertaken on Site.

Geomembrane shall be installed in all locations as indicated in the Drawings.

The primary function of the lining system is to prevent contaminated stormwater from leaking from the impoundment and subsequently entering and polluting the groundwater in the local area.

Good quality assurance standards shall be maintained throughout the Works to ensure the integrity of the lining system.

The Contractor shall provide all supervision, labour and equipment for the installation of the geomembrane in accordance with the Specifications and Drawings.

Prior to installation, all Principal supply geomembrane to be incorporated in the Works would have been approved in writing by the Superintendent.

1.23.1.2 Submittals

Submittal Documentation

The Contractor is to submit the following to the Superintendent for review and approval, within a reasonable time to prevent any delay in the installation of the geomembrane. This is not an all-inclusive list; it is the Contractor's responsibility to ensure that it has been through these Specifications in sufficient detail to identify all submittal requirements:

- If any proposed change in liner sub-contractor from what was approved at Contract award, documentation of the liner sub-contractor and installer's qualifications:
  - Submit proposed sub-contractor relevant company experience; and,
  - Submit resumes or qualifications of the proposed Field Installation Supervisor, Master Installer and Installer to be assigned to this project; and,
- Liner sub-contractor Quality Control Program.

Additional Submittals (In-Progress and at Completion):

For convenience, the relevant Sections have been highlighted; however, these may not necessarily be the only references to submittal documentation required. This is not an all-inclusive list; it is the Contractor's responsibility to ensure that it has been through these Specifications in sufficient detail to identify all submittal requirements:

- Daily written acceptance of substrate surface;
- Prequalification test seam samples;
- Field seam non-destructive test results;
- Daily field installation reports; and,

- Installation record drawing.

1.23.1.3 Quality Control

Installer's Qualifications

Installation and seaming of the geomembrane must be undertaken by geomembrane installers with experience in seaming the same type of geomembrane being installed and using the same seaming procedure to be used on Site.

Installation shall be performed under the direction of a Field Installation Supervisor who shall be responsible throughout the geomembrane installation, for geomembrane panel layout, seaming, patching, testing, repairs and all other activities of geomembrane installation. The Field Installation Supervisor shall have installed or supervised the installation and seaming of a minimum of 5 projects involving a total of 100,000 m^2 of geomembrane of the type specified or similar product.

Seaming shall be performed by an Installer who has seamed a minimum of 50,000 m^2 of geomembrane of the type specified or similar product, using the same type of seaming apparatus to be used in the current project.

All seaming, patching, other welding operations and testing shall be performed by qualified technicians employed by the geomembrane liner sub-contractor.

CQA Inspection

The Superintendent will undertake the necessary CQA inspections to verify that the Works have been carried out in accordance with the Specifications.

The CQA inspections include verifications and evaluation of workmanship and the provision of advice on installation, repair of the geomembrane lining system in accordance with the Specifications and Drawings, and issuing a final signoff acceptance of the liner installation to the Principal.

The Contractor is to provide the necessary assistance, advanced notification of lining activities and access to all Works area to the Superintendent to enable the full inspection of the Works.

1.23.1.4 Delivery, Storage and Handling

The Principal will provide the geomembrane liner material within 1 km of the works area. The Contractor will be required to collect the rolls of liner from the Principal's storage location. The collection may be as a single activity taking all of the necessary liner material for the Works or single rolls collected as and when required in the works.

If the liner material is to be stockpiled in close proximity of the Works, a dedicated area shall be used for the storage of the geomembrane material collected from the Principal. The material shall be stored as follows:

- The geomembrane shall be protected from mud, dirt, dust, puncture, cutting or any other damaging or deleterious conditions;
- Away from high traffic areas, but sufficiently close to the active Works area to minimise handling;
- Elevated aboveground on a level, dry, well-drained and stable area. Should timber pallets be used, they must be inspected and free of nails/pins prior to roll placement;

- Protected from stormwater runoff, standing water, chemicals, excessive heat, vandalism and animals;
- Blocks provided to prevent sliding or rolling of stacks;
- All roll labeling shall be clearly visible;
- Handling of geomembrane rolls is to be via the use of a spreader bar or stinger bar (a bar protruding from the front end of a forklift or other equipment). The bar must be capable of supporting the full weight of the geomembrane roll without significant bending; and,
- Under no circumstances may the rolls be dragged, lifted with the forks of a forklift or pushed to the ground from the delivery vehicle.

Any damaged material shall be assessed by the Superintendent and if deemed necessary, rejected and the Contractor advised to immediately remove the material from the Works area.

On completion of the liner installation Works, all reusable leftover liner material, excluding wastage and small offcuts, is to re returned to the Principal's storage area, as instructed by the Superintendent.

1.23.2 Product

The liner material will be 2.0 mm HDPE geomembrane.

The liner material is leftover material from a recent construction project and as such, has been through the necessary CQA testing to demonstrate the appropriate quality of the liner material.

The Principal supply will also include the necessary welding rods for the liner installation.

The Superintendent would have approved the liner material for installation into the Works prior to the Contractor receiving the material.

1.23.3 Installation

1.23.3.1 Project Conditions

Geomembrane shall not be installed in the presence of standing water, while precipitation is occurring, during excessive winds or when material temperatures are outside the limits specified in these Specifications.

1.23.3.2 Surface Preparation

The surface to be lined shall be uniform and free of all sharp or angular objects that may damage the geomembrane prior to installation of the geomembrane.

The Contractor, liner sub-contractor and Superintendent shall inspect the surface to be covered with the geomembrane on each day's operations prior to placement of geomembrane to verify suitability.

The liner sub-contractor shall provide daily written acceptance for the surface to be covered by the geomembrane installation, to ensure surface suitability.

All subgrade surface damage caused by construction equipment and deemed unsuitable for geomembrane deployment shall be repaired by the Contractor prior to placement of the geomembrane. All repairs require the approval of the Superintendent and the liner sub-contractor.

1.23.3.3 Geomembrane Placement

The geomembrane shall be installed to the limits shown on the Drawings.

No geomembrane material shall be unrolled and deployed if the material temperatures are lower than 10°C unless otherwise approved by the Superintendent. The specified minimum temperature for material deployment may be adjusted by the Superintendent based on recommendations by the manufacturer and the Superintendent. Only the quantity of geomembrane that will be anchored and seamed together in one day shall be deployed.

Installation of the geomembrane shall not result in scratching, scoring or crimping of the material.

The liner sub-contractor and Superintendent shall inspect the surface of each roll of material as it is being deployed or after deployment, but before welding, to verify that the material is free from visual defects such as tears, punctures, abrasions, indentations, cracks, thin spots or other faults in the material. If damages are identified, they are to be repaired or replaced according to these Specifications or as directed by the Superintendent.

NO vehicular traffic shall travel on the liner material.

The liner sub-contractor shall surcharge load all lining material during construction with appropriate material (i.e. sandbags or approved equivalent) to ensure the liner is protected from wind uplift and displacement, including down-slope creep. The frequency and spacing of the sandbag shall be as required based on Site conditions and lining sub-contractor's experience/recommendation. The sandbag material shall be sufficiently close-knit to prevent soil fines from working through the bags and discharging on the liner. The sandbags shall be filled with material that does not pose a risk of damage to the geosynthetics.

Geomembrane placement shall not be carried out if moisture prevents proper surface preparation, panel placement or panel seaming.

Damaged panels or portions of the damaged panels, which have been rejected, shall be marked and its removal from the Works area recorded.

The geomembrane shall not be allowed to "bridge over" voids or low areas in the subgrade. In these areas, the geomembrane shall be placed to allow the geomembrane to rest in intimate contact with the subgrade. **Special attention to this aspect is to be paid when laying liner material in the invert of the stormwater sump.**

Wrinkles caused by panel placement or thermal expansion shall be minimised in accordance with these Specifications.

Considerations on Site Geometry: In general, seams shall be oriented parallel to the line of the maximum slope. In corners and odd shaped geometric locations, the total length of field seams shall be minimised.

Overlapping: The panels shall be overlapped prior to seaming to whatever extent is necessary to affect a good weld and allow for proper testing. In no case shall this overlap be less than 75 mm.

All material offcuts shall be removed from the Works area and not simply left under the HDPE liner.

1.23.3.4 Defects and Damage

The Superintendent shall inspect the geomembrane as it is rolled out on the surface to be lined. The Superintendent shall be responsible for the acceptance or rejection of geomembrane being incorporated into the Works.

Manufacturing defects are areas where the geomembrane surface and/or texturing is not consistent and uniform. If a roll is suspected to be of inferior quality, the Superintendent may reject the roll, which will be immediately replaced by the Principal.

1.23.3.5 Seaming Procedures

Cold weather installations shall follow guidelines as outlined in GRI GM9.

No geomembrane material shall be seamed when liner temperatures are less than 10°C unless the liner sub-contractor can demonstrate to the Superintendent, using prequalification test seams, that field seams comply with the project Specifications.

No geomembrane material shall be seamed when the sheet temperature is above 75°C as measured by an infrared thermometer or surface thermocouple unless otherwise approved by the Superintendent. This approval will be based on recommendations by the manufacturer and/or on a field demonstration by the liner sub-contractor using prequalification test seams to demonstrate that seams comply with the Specifications.

Seaming shall primarily be performed using automatic fusion welding equipment and techniques. Extrusion welding shall be used where fusion welding is not possible such as at corners, patches, repairs and short (less than a roll width) runs of seams.

The weld surfaces shall be cleaned prior to welding. The weld area shall be free of moisture, dust, debris, markings and foreign materials. In the case of extrusion welding, oxidation by-products shall be removed from the surface to be welded by grinding/buffing. Grind marks shall not be deeper than 10 % of the geomembrane thickness. Welding shall be performed shortly after grinding (within 30 minutes) so that surface oxide formation does not reform.

The Contractor shall utilise the machine mounted temperature readout (calibrated in accordance with the manufacturer's recommendation) or have an independently calibrated hand-held temperature measuring device to confirm temperatures of each and every welding machine prior to the commencement of any test or field welds. All information regarding the results gained from the temperature device shall be recorded for each welding machine.

Welding of all main joins between adjacent geomembrane panels (primary welds) shall be conducted using hot-wedge welding, producing two parallel seams with an air channel in between (dual track fusion welding). The hot-wedge welding shall be conducted using the split head wedge fusion weld method which will fuse the upper and lower overlapped geomembrane sheets.

The welding equipment shall be a fully automated device comprising of a heated copper wedge, pressure rollers and electronic controls. The copper wedge shall be controlled and constantly monitored by a programmable controller with an audible off temperature alarm and a variable speed drive unit. The copper wedge shall create two contact fusion areas of a minimum width of 15 mm and a 5 mm minimum wide void between each of the separate parallel weld zones. This void shall be created over the entire seam length to allow for field weld pressure testing.

The extrusion process is used primarily for detailed work and repair work (secondary weld) or where approved in areas that would be inaccessible to the dual track fusion weld (such as around structures, pipes and other penetrations). The extrusion welding shall be conducted using surface extrusion hand welders.

The minimum width of the surface extruded bead shall be 30 mm. The surface extrusion welder shall be semi-automated and equipped with electronic controls, which constantly monitor outputs for both preheat and extradite. The unit shall be capable of pre-heating the sheet just prior to the casting of the extrudate over the upper and lower section of the weld zone.

The extruded granulate or rod for surface extrusion welding shall be manufactured from the same resin type used in the manufacture of the geomembrane. All physical properties shall be identical to those possessed by the geomembrane raw material. The manufacturer shall provide certified test data with each batch of welding granulate or rod. All granulate or rod supplied shall be packed to prevent the ingress of moisture and other contaminants. If necessary, the Contractor shall also employ an apparatus specifically built for drying granulate to ensure weld quality.

All geomembrane panels subject to hot wedge welding shall be overlapped by a minimum of 125 mm and a minimum of 75 mm for extrusion welding to allow for proper Construction Quality Assurance testing.

The Contractor shall ensure prior to any primary or secondary welding that weld zones be clean, free from moisture, dust and any other foreign matter. All weld zone surfaces shall be either cleaned or abraded no more than 30 minutes prior to the commencement of welding any seam. In extremely bad conditions it may be necessary for the liner Installer to clean and/or abrade the weld zone areas only minutes prior to the required weld.

All primary welds used to connect panel end to sheets shall form T-joins (tees). These T-connections must be a distance of at least 0.5 m apart. All T-joins shall be patched. Patches are to be installed as detailed below. The welding seams of the geomembrane cannot cross (no cruciform connections).

1.23.3.6 Field Quality Control

The Superintendent shall be notified prior to all prequalification and production welding and testing.

Pre-qualification Test Seams

Test seams shall be prepared and tested by the liner sub-contractor to verify that seaming parameters (speed, temperature and pressure of welding equipment) are adequate.

Test seams shall be made by each welding technician and tested in accordance with ASTM D 5820 at the beginning of each seaming period. Test seaming shall be performed under the same conditions and with the same equipment and operator combination as production seaming. The test seam shall be approximately 3.5 m long for fusion welding and 1m long for extrusion welding with the seam centered lengthwise. As a minimum, test seams shall be made by each technician once every 4-6 hours or if any welding stoppage exceeds one hour; additional tests may be required with changes in environmental conditions.

Two 25 mm wide specimens shall be die-cut using calibrated equipment by the liner sub-contractor from each end of the test seam (total of four specimens). These specimens shall be tested by the liner sub-contractor using a calibrated field tensiometer, testing both tracks for peel strength and also for shear strength. Each specimen shall fail in the parent material and not in the weld, "Film Tear Bond" (FTD) failure. Seam separation equal to or greater than 25% weld area of the track width shall be considered a failing test.

The minimum acceptable seam strength values to be obtained for all specimens tested are listed in Section 1.23.5 - Table 2. All four specimens shall pass for the test seam to be a passing seam.

If a test seam fails, an additional test seam shall be immediately conducted. If the additional test seam fails, the seaming apparatus shall be rejected and not used for production seaming until the deficiencies are corrected, and a successful test seam can be produced.

A sample from each test seam shall be labelled. The label shall indicate the date, geomembrane temperature, number of the seaming unit, technician performing the test seam and pass or fail description. The sample shall then be given to the Superintendent for archiving.

Field Seam Non-destructive Testing

All field seams shall be non-destructively tested by the liner sub-contractor over the full seam length. Each seam shall be numbered or otherwise designated. The location, date, test unit, name of tester and outcome of all non-destructive testing shall be recorded and submitted to the Superintendent.

All seams are to be non-destructive weld tested over the full length.

All defects found during testing shall be numbered and marked immediately after detection. All defects found shall be repaired, retested and remarked to indicate acceptable completion of the repair.

Non-destructive testing shall be performed using vacuum box, air pressure or spark testing equipment.

Non-destructive testing shall be performed by experienced technicians familiar with the specified test methods. The liner sub-contractor shall demonstrate to the Superintendent all test methods to verify the test procedures are valid.

Extrusion seams shall be vacuum box tested by the liner sub-contractor in accordance with ASTM D 5820 and ASTM D 5641 with the following equipment and procedures:

- Testing is to begin no earlier than one (1) hour after welding.
- Equipment for testing extrusion seams shall be comprised of but not limited to: a vacuum box assembly consisting of a rigid housing, a transparent viewing window, a soft rubber gasket attached to the base, porthole or valve assembly and a vacuum gauge; a vacuum pump assembly equipped with a pressure controller and pipe connections; a rubber pressure/vacuum hose with fittings and connections; a plastic bucket; wide brush or mop; and a soapy solution.
- The vacuum pump shall be charged, and the tank pressure adjusted to be between 1 to 4 psig (6.9 kPa to 27.5 kPa);

- The liner sub-contractor shall create a leak tight seal between the gasket and geomembrane interface by wetting a strip of geomembrane approximately 0.3 m by 1.2 m (length and width of box) with a soapy solution, placing the box over the wetted area, and then compressing the box against the geomembrane. The liner sub-contractor shall then close the bleed valve, open the vacuum valve, maintain initial pressure of between 1 to 4 psig (6.9 kPa to 27.5 kPa) for approximately five seconds. The geomembrane shall be continuously examined through the viewing window for the presence of soap bubbles, indicating a leak. If no bubbles appear after five seconds, the area shall be considered leak free. The box shall be depressurised and moved over the next adjoining area with an appropriate overlap and the process repeated;
- All areas where soap bubbles appear shall be marked, repaired and then retested.
- At locations where seams cannot be non-destructively tested alternate non-destructive spark testing or equivalent shall be substituted; and,
- All seams that are vacuum tested shall be marked with the date tested, the name of the technician performing the test and the results of the test.

Double fusion seams with an enclosed channel shall be air pressure tested by the liner sub-contractor in accordance with ASTM D 5820 and the following equipment and procedures:

- Equipment for testing double fusion seams shall be comprised of but not limited to: an air pump equipped with a pressure gauge capable of generating and sustaining a pressure of 210 kPa (30 psig), mounted on a cushion to protect the geomembrane; and a manometer equipped with a sharp hollow needle or other approved pressure feed device.
- The testing activities shall be performed by the liner sub-contractor. Both ends of the seam to be tested shall be sealed and a needle or other approved pressure feed device inserted into the tunnel created by the double wedge fusion weld.
- The air pump shall be adjusted to a pressure of 210 kPa, and the valve closed. Allow two minutes for the air to come to equilibrium in the channel and sustain pressure for five minutes.
- If pressure loss does not exceed 28 kPa after this five-minute period, the seam shall be considered leak tight. Release pressure from the opposite end verifying pressure drop on needle to ensure testing of the entire seam. The needle or other approved pressure feed device shall be removed and the feed hole sealed; and,
- If loss of pressure exceeds 28 kPa during the testing period or pressure does not stabilise, the faulty area shall be located, repaired and retested by the liner sub-contractor.

Results of the pressure testing shall be recorded on the liner at the seam tested and on a pressure testing record.

In addition to the above tests, the welds are to be visually inspected to assess the quality of the workmanship and the appearance of the welded seam. For wedge welds there needs to be a consistent “squeeze out” on the weld edge which is an indicator that the correct temperature and pressure were used during installation. In the case of extrusion fillet welds, the weld appearance shall be smooth, uniform and free of streaks and lumps. In addition, there shall be no obvious scoring, notches or deep scratches introduced by the surface grinding.

Destructive Field Seam Testing

Due to the short length of welding, there is no requirement for destructive testing.

Identification of Defects

Panels and seams shall be inspected by the liner sub-contractor and Superintendent during and after panel deployment to identify all defects, including holes, blisters, undispersed raw materials and signs of contamination by foreign matter.

Evaluation of Defects

Each suspect location on the liner (both in geomembrane seam and non-seam areas) shall be non-destructively tested using one of the methods described in this Section. Each location which fails non-destructive testing shall be marked, numbered, measured and posted on the daily "installation" drawings and subsequently repaired.

Defective seams, tears or holes shall be repaired by re-seaming or applying an extrusion or wedge welded cap-strip.

Re-seaming may consist of either:

- Removing the defective weld area and re-welding the parent material using the original welding equipment; or
- Re-seaming by extrusion welding along the overlap at the outside seam edge left by the fusion welding process. Wedge welding can be used for long repairs.

Blisters, larger holes and contamination by foreign matter shall be repaired by patches and/or extrusion weld beads as required. Each patch shall extend a minimum of 150 mm beyond all edges of the defects.

All repairs shall be measured, located and recorded.

Verification of Repairs on Seams

Each repair shall be non-destructively tested using either vacuum box, spark testing or air pressure testing (long repairs) methods. Tests which pass the non-destructive test shall be taken as an indication of a successful repair. Failed tests shall be re-seamed and re-tested until a passing test results. The number, date, location, technician and test outcome of each patch shall be recorded.

Field Installation Reports

On conclusion of the liner installation Works, the liner sub-contractor shall provide the Superintendent with a report for all Works that shall include the following:

- Total amount and location of geomembrane placed;
- Total length and location of seams completed, name of technicians doing seaming and welding unit numbers;
- Drawing of the installed geomembrane showing panel numbers, seam numbers and locations of non-destructive testing;
- Results of prequalification test seams;
- Results of non-destructive testing; and,
- Results of vacuum/spark/air pressure testing of repairs.

1.23.3.7 Liner Acceptance

Geomembrane liner will be accepted by the Superintendent when:

- The entire installation is finished;
- All liner sub-contractor's QC documentation is completed, submitted and approved by the Superintendent;
- Verification of the adequacy of all field seams and repairs and associated geomembrane testing is complete; and,
- All CQA testing on the installed material has been completed and approved by the Superintendent.

1.23.3.8 Disposal of Scrap Materials

On completion of installation, the liner sub-contractor shall dispose of all waste and scrap material in a location approved by the Superintendent, remove equipment used in connection with the Works herein, and shall leave the Site in a neat acceptable manner. No scrap material shall be allowed to remain on or under the geomembrane surface.

1.23.4 Geomembrane Material Specifications

For information for the liner installation contractor, the geomembrane shall have the minimum material Specifications as set out in Table 1:

Table 1: HDPE Geomembrane Material Specifications

Property	Test Method	HDPE Test Value – 2.00mm Smooth Textured	Testing Frequency (minimum)
Thickness (min. ave.) • Lowest individual for 8 out of 10 values • Lowest individual for any of the 10 values	D 5994	nom. (-5%) - 10% - 15%	Per roll
Asperity Height (min. ave.) (*1*)	D 7466	0.40 mm	Every 2nd roll (*2*)
Density (min. ave.);	D 1505/D 792	0.940 g/cc	90,000 kg
Tensile Properties (min. ave.) (*3*) • Yield strength • Break strength • Yield elongation • Break elongation	D 6693 Type IV	 29 kN/m 21 kN/m 12% 100%	9,000 kg
Tear Resistance (min. ave.)	D 1004	249 N	20,000 kg
Puncture Resistance (min. ave.)	D 4833	534 N	20,000 kg
Carbon Black Content - Particle size ~20 nm (range)	D 4218 (*5*)	2.0-3.0%	9.000 kg
Carbon Black Dispersion	D 5596	note (*6*)	20,000 kg
Stress Crack Resistance (*4*)	D 5397 (App.)	500 hr.	Per GRI GM10

Geomembrane Oxidative Induction Time (OIT) (min. ave.) (7) (a) Standard OIT, **and** (b) High Pressure OIT	 D 8117 D 5885	 100 min. 400 min.	90,000 kg
Geomembrane Oven Aging at 85ºC (*7*) (11) (a) Standard OIT (min. ave.) - % retained after 90 days, **and** (b) High Pressure OIT (min. ave.) - % retained after 90 days	D 5721 D 8117 D 5885	 55% 80%	Per each formulation
Geomembrane UV Resistance (*8*) (11) (a) Standard OIT (min. ave.) or (b) High Pressure OIT (min. ave.) - % retained after 1,600 hrs (*10*)	D 7238 D 8117 D 5885	 N.R. (*9*) 50%	Per each formulation
Longitudinal Edge		Smooth on both sides	

(1) Of 10 readings, 8 out of 10 must be ≥ 0(1) Of 10 readings, 8 out of 10 must be ≥ 0.35 mm, and lowest individual reading must be ≥ 0.30 mm; also see Note 6.
(2) Alternate the measurement side for double sided texture sheet.
(3) Machine direction (MD) and cross machine direction (XMD) average values shall be on the basis of 5 test specimens each direction.
Yield elongate is calculated using a gauge length of 33 mm.
Break elongation is calculated using a gauge length of 50 mm.
(4) The SP-NCTL test is not appropriate for testing geomembranes with textured or irregular rough surfaces. Test shall be constructed on smooth edges of textured rolls or on smooth sheets made from the same formulation is being used for the textured sheet materials.
The yield stress used to calculate the applied load for the SP-NCTL test shall be the manufacturer's mean value via MQC testing.
(5) Other methods such as D 1603 (tube furnace) or D 6370 (TGA) are acceptable if an appropriate correlation to D 4218 (muffle furnace) can be established.
(6) Carbon black dispersion (only near spherical agglomerates) for 10 different views: 9 in Categories 1 or 2 and 1 in Category 3.
(7) It is also recommended to evaluate samples at 30 and 60 days to compare with the 90 day response.
(8) The condition of the test shall be 20 hr. UV cycle at 75°C followed by 4 hr. condensation at 60° C.
(9) Not recommended since the high temperature of the Std-OIT test produces an unrealistic result for some of the antioxidants in the UV exposed samples.
(10) UV resistance is based on percentage retained value regardless of the original HP-OIT value.
(11) Test results are to be less than 12 months old relative to the date of manufacture of the delivered geomembrane and the manufacturer is to provide certification that the resin is of the same formulation as the rolls supplied for the works.
For Notes, refer to GRI Test Method GM13 - http://www.geosynthetic-institute.org/grispecs/gm13.pdf

Minimum Average Roll Value (min. ave.) is defined as the Mean value less 2 standard deviations. Mathematically, this implies that 97.5% of the results of the tested specimens will exceed the min. ave.

The Regulatory Authority landfill design guidelines require that the manufacturer carry out both the standard AND high pressure tests for the Oxidative Induction Time and the Oven Aging properties of the geomembrane, as opposed to the GRI GM13 giving the manufacturer the option to choose which of the two tests to perform.

1.23.5 Geomembrane Weld Properties

The geomembrane shall have the minimum average weld properties as set out in Table 2, with the Sample Strength being applicable to a 25 mm wide, 2.0 mm thick sample. Weld properties are determined in accordance with GRI GM19a Standard Specification:

Table 2: Minimum Average Weld Properties

Property	Test Method	Sample Strength (N/25 mm)
Fusion/Wedge Weld - Shear strength	ASTM D 6392	700
Fusion/Wedge Weld - Peel strength	ASTM D 6392	530
Extrusion Weld – Shear Strength	ASTM D 6392	700
Extrusion Weld – Peel Strength	ASTM D 6392	455

1.24 Fencing and Gates

The Contractor shall provide all materials, supervision, labour and equipment for the construction of the fencing and gates to the green waste facility southern access and around the stormwater sump in accordance with the Specifications and Drawings.

The mesh fencing is to comply with *AS 1752.1:2010 "Chain Link Fabric Fencing – Security Fences and Gates – General Requirements"*.

The purpose of the permanent fencing is to limit the risk of unauthorised human and fauna access to the green waste facility and stormwater sump.

The stormwater sump perimeter fencing shall be 1.8 m high mesh fence and the facility entrance fencing shall be 1.8 m high mesh fence with three strands of barbed wire above, resulting in a total fence height of approximately 2.3 m high mesh fence. All fencing material to be galvanized. The 1.8 m gates are to have three strands of barbed wire on top to reflect a similar appearance as the fence configuration.

The fencing typical minimum detail includes the following:

- 1.8 m fence with three strands of barbed wire:
  - Corner posts – 50 mm x 3.5 mm NB pipe galvanised, capped @ 3,000 m;
  - Intermediate posts – 32 mm x 3.0 mm NB pipe galvanised, capped @ 3,000 mm, max 3.3 m centres;
  - Stays – 32 mm x 2.5 mm NB pipe galvanised;
  - Chain wire mesh – 1,800 x 50 x 2.5 mm KK heavy galvanised chain wire mesh;
  - Cable wires – 4.00 mm heavy galvanised plain wire – Helical x 3 rows;
  - Barbed wires – 1.60 mm heavy duty galvanised barbed wire – 3 rows; and,
  - Footings:

    - Posts – 250 diameter x 800 mm deep, full depth concrete foundation;
- 1.8 m fence without three strands of barbed wire to be as above, with post lengths reduced accordingly.

Final fencing details are to be provided by the Contractor, for approval by the Superintendent prior to installation.

1.25 Sump Safety System

The Contractor shall provide all materials, supervision, labour and equipment for the construction of the safety system within the stormwater sump in accordance with the Specifications and Drawings.

The sump safety system consists of a polyethylene rope ladders, a minimum of 600 mm wide fixed to the sump perimeter fencing.

The top of the rope ladder shall be attached to a spreader bar to maintain the rope ladder shape. The rope ladder shall be weighted along the ladder length to prevent the ladders from floating. The ladders shall be secured to the sump perimeter fencing at ground level.

The proposed rope ladder and all associated fixings shall be proposed by the Contractor and approved by the Superintendent before installation. Fixings shall be weather resistant fixings and provide at least 20 years of service in the exposed environment and compatible with typical liquid waste conditions and exposure to UV radiation. The fixings shall be soft, so they pose no puncture risk to the underlying geomembrane liner.

1.26 As-Constructed Drawings

The Contractor is to provide a set of As-Constructed drawings in AutoCAD format and PDF A3 size. The As-Constructed drawings are to show the following minimum detail:

- Top of subgrade surface;
- Top of engineered fill surface (bottom of compacted limestone layer);
- HDPE spillway apron position;
- Top of compacted limestone surface (bottom of recycled asphalt layer);
- Top of finished surface;
- Anchor trench position;
- Concrete lane partition location;
- Fencing and gate position; and,
- Any changes to the Approved For Construction Drawings that occurred during construction, marked in red or if changes are extensive, changes to the drawings, with modifications indicated within clouds to clearly indicate changes to the original Drawings.

Appendix No. 4 – Temporary Green Waste Area

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Schedule 1: Maps

Premises map

The Premises is shown in the map below. The blue line depicts the Premises boundary.

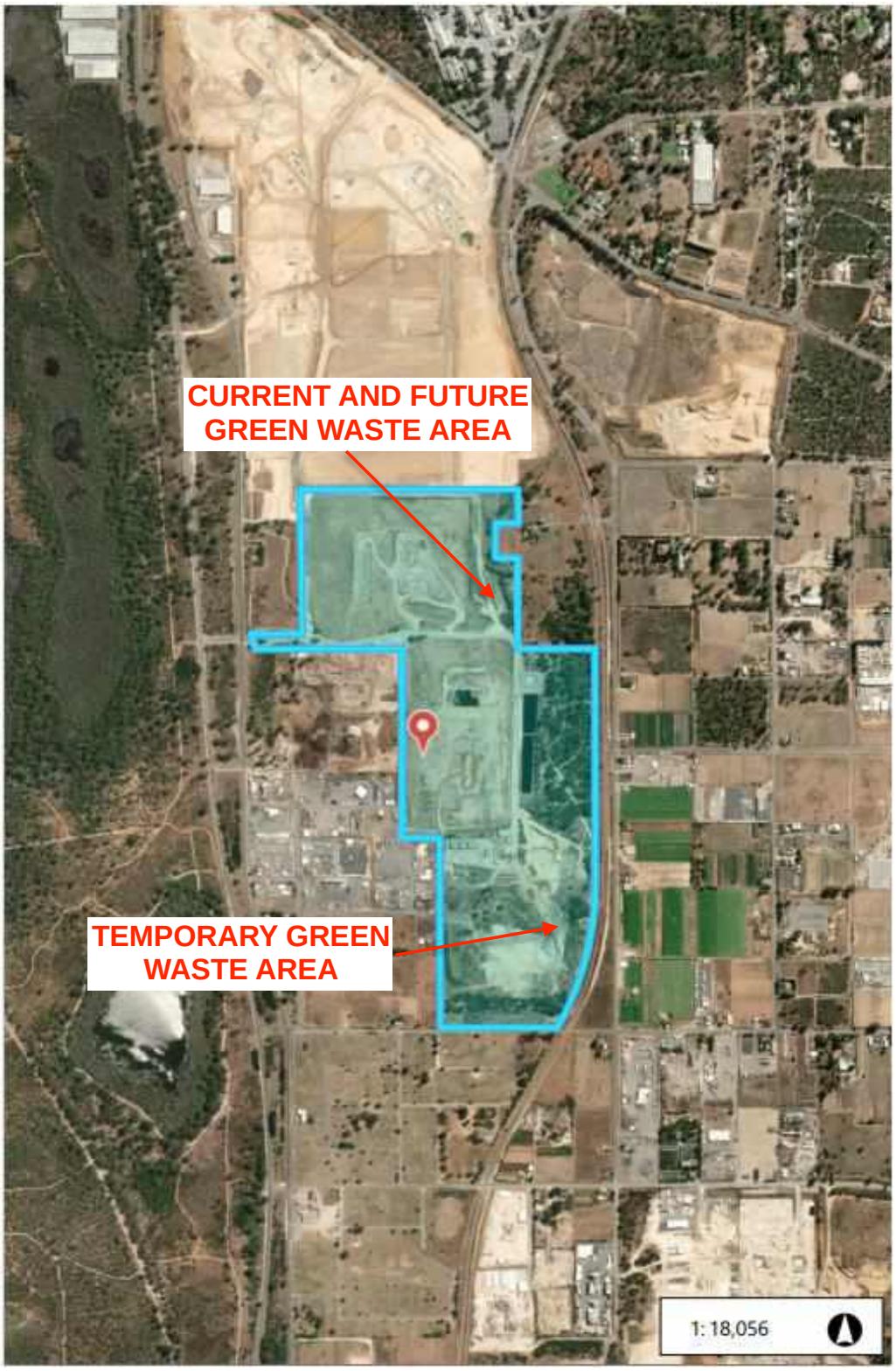

Figure 1: Prescribed premises boundary