[redacted]

From: [redacted]
Sent: 08 May 2024 09:16
To: [redacted]
Cc: [redacted]
Subject: RE: Mitcham Gasworks - Amended application submission pack

Hi [redacted]

I hope you're well.

I have reviewed the below and happy to close the circular economy matter off. @[redacted] please ensure appropriate conditions are secured.

We will await to hear from Merton on the outcome of the upcoming committee. All the best with it!

Kind regards,

[redacted]
Senior Strategic Planner – Development Management
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From: [redacted] wsp.com>
Sent: Thursday, May 2, 2024 3:40 PM
To: [redacted] london.gov.uk>; [redacted] wsp.com>
Cc: [redacted] berkeleygroup.co.uk>; [redacted] merton.gov.uk>
Subject: RE: Mitcham Gasworks - Amended application submission pack

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Hello [redacted]

Thanks for coming back to us to confirm that matters are resolved in relation to Energy and WLC.

We have reviewed the CE comment and note that the CE Memo on 16 Feb setting out "*key opportunities which will be explored through detailed design to address this" as follows cell (N38):*

"As the design progresses, materials with higher recycled content, such as concrete with a higher percentage of binders, the use of 100% recycled steel, increasing the recycled content in gypsum plasterboard, and using recycled carpet tiles in communal areas, will be explored in order to achieve 20% recycled content by value."

5.17 of the Circular Economy Statement also sets out materials which will help meet the target.

We just wanted to draw your attention to the above, as these appear to address the final query raised, and may have been missed. Are you able to clarify if the above is sufficient to close this final matter off?

Kind regards,

[redacted]
Planning Associate
MTCP MRTPI

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From: [redacted] <[redacted]london.gov.uk>
Sent: Monday, April 22, 2024 2:01 PM
To: [redacted] <[redacted]wsp.com>; [redacted] <[redacted]wsp.com>
Cc: [redacted] <[redacted]berkeleygroup.co.uk>; [redacted] <[redacted]merton.gov.uk>
Subject: RE: Mitcham Gasworks - Amended application submission pack

Hi [redacted]

I have received responses from colleagues on energy, WLC and CE.

Energy – all matters resolved. GLA officers support the proposed condition for PV.

WLC - No further comments and no further actions are required by the applicant at the planning stage - all previous queries have been responded to, as confirmed in the attached memo.
A condition should be secured requiring the applicant to submit a post-construction assessment to report on the development's actual WLC emissions. The template and suggested condition wording are available on the GLA website (https://www.london.gov.uk/programmes-strategies/planning/implementing-london-plan/london-plan-guidance/whole-life-cycle-carbon-assessments-guidance).

CE - There is one key point remaining relating to the reused and recycled content calculation. The total material reported in the calculation provided differs from the Bill of Materials reported. Where it is noted that the reused and recycled content calculated does not demonstrate compliance with the GLA Policy target for a minimum of 20% reused and/or recycled content at the current stage. The Applicant is strongly encouraged to set out key opportunities which will be explored through detailed design to address this.

Please let me know if you have any questions.

Kind regards,

[redacted]
Senior Strategic Planner – Development Management
GREATER**LONDON**AUTHORITY

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From: [redacted] <[redacted]wsp.com>
Sent: Friday, April 5, 2024 2:01 PM
To: [redacted] <[redacted]london.gov.uk>; [redacted] <[redacted]wsp.com>
Cc: [redacted] <[redacted]berkeleygroup.co.uk>; [redacted] <[redacted]merton.gov.uk>
Subject: RE: Mitcham Gasworks - Amended application submission pack

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Hi [redacted]

Thanks for the comments on energy, WLC and CE in your email below. I attach the various updated spreadsheets:

1. Energy Memo
2. Carbon emission reporting spreadsheet
3. CE Memo
4. CE Spreadsheet
5. WLC Memo
6. WLC spreadsheet

Let us know if these matters are now agreed or if there are any other comments.

We have today submitted an updated package of documents to Merton. These are largely the same as the package of documents that were submitted in December 2023. We are re-submitting these as a whole to allow Merton to go out to public consultation on these. There have been a few additional minor amendments since December 2023, the most notable of which are:

1. The removal of the central pressure reduction system and replacement with landscaping (which addresses one of the design comments that the GLA had in its Stage 1 report about relationship between the PRS and ground floor residential units).
2. The relocation of some of the ground floor residential units to move them further away from servicing bays.
3. The addition of two more servicing bays within the site.
4. Improvements to servicing routes within the site for the non-residential units.
5. The commitment to a contribution to provide off-site ecology compensation in the form of restoration of acid grassland on Mitcham Common.

All the other key [redacted] that you are aware of from the December 2023 submission remain the same, such as the increase to 79% dual aspect homes, the reduction in total homes to 579, and the introduction of setbacks along Portland Road and Hay Drive to reduce the perception of scale on these boundaries.

The link below contains all the updated and amended applications documents and drawings. Let me know if you have any trouble accessing these or have any queries on the amendments.
https://we.tl/t-FOKlOKUefB

An image showing the ground floor layout with the removal of the central pressure reduction system is shown below for reference.

Thanks

[redacted]
Planning Director

[redacted]

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From: [redacted] <[redacted]london.gov.uk>
Sent: Monday, March 18, 2024 1:16 PM
To: [redacted] <[redacted]wsp.com>
Cc: [redacted] <[redacted]berkeleygroup.co.uk>; [redacted] <[redacted]wsp.com>; [redacted] <[redacted]merton.gov.uk>
Subject: RE: Mitcham Gasworks - Amended application submission pack

Hi [redacted]

I hope you're well.

I have received responses on energy, WLC and CE matters.

Energy – no further information required at this stage. PV condition suggested. Draft S106 to be provided.

CE and WLC – actions required in attached memos.

Please let me know if you have any questions.

Kind regards,

[redacted]
Senior Strategic Planner – Development Management
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From: [redacted] <[redacted]wsp.com>
Sent: Monday, March 4, 2024 11:17 AM
To: [redacted] <[redacted]london.gov.uk>
Cc: [redacted] <[redacted]berkeleygroup.co.uk>; [redacted] <[redacted]wsp.com>; [redacted] <[redacted]merton.gov.uk>; [redacted] <[redacted]london.gov.uk>
Subject: RE: Mitcham Gasworks - Amended application submission pack

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Hello [redacted]

Thank you for confirming your position with regards to the fire safety statement and BNG.

Further to the comments received in relation to energy matters, please see updated CE spreadsheet and statement, and updated energy memo attached, along with a PV mark up for info, as requested. The PV mark-up shows the areas identified for the PV, and sets out reasons why PV cannot be increased on other rooftops. I hope the attached suitably addressed the remaining energy comments, but please do let me know if you have any further comments or questions on this matter.

With regards to urban design, my understanding from our previous discussions is as per the below – the urban design comments as raised in the stage 1 report are all addressed within the amended December 2023 documentation. Please can you confirm whether this is correct, or whether we can expect to receive any further comments in relation to this aspect of the scheme?

Kind regards,

[redacted]

Planning Associate
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Sent: Friday, February 16, 2024 4:14 PM
To: [redacted] <[redacted]wsp.com>
Cc: [redacted] <[redacted]berkeleygroup.co.uk>; [redacted] <[redacted]wsp.com>; [redacted] <[redacted]merton.gov.uk>; [redacted] <[redacted]london.gov.uk>
Subject: RE: Mitcham Gasworks - Amended application submission pack

Hi [redacted]

Thanks for your time earlier.

It would be useful if we could receive an updated fire safety statement or green walls assessment from your fire safety consultant so we are assured the green walls would be acceptable from a fire safety perspective.

I understand the site constraints and that 8% BNG is the maximum that can be achieved on the site. We will make a decision on this on balance, considering the broader public benefits of the scheme, at the time of the Stage 2 referral. No further information is required at this stage.

Kind regards,

[redacted]
Senior Strategic Planner – Development Management
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Sent: Friday, February 16, 2024 1:50 PM
To: [redacted] <[redacted]london.gov.uk>
Cc: [redacted] <[redacted]berkeleygroup.co.uk>; [redacted] <[redacted]wsp.com>; [redacted] <[redacted]merton.gov.uk>; [redacted] <[redacted]london.gov.uk>
Subject: RE: Mitcham Gasworks - Amended application submission pack

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Hi [redacted]

Thanks for your call to discuss the below.

With regards to the fire safety point, I understand there is nothing in writing / London plan guidance specifically mentioning green walls. As discussed, the fire consultant Introba has reviewed the comments below and confirmed that the green walls to the PRS comply with fire safety guidance. We can look to submit this in writing, from Introba for your comfort, if this would assist.

In relation to BNG, as discussed, whilst the government's mandatory 10% biodiversity net gain came into force on Monday 12 February 2024, as the current application was submitted (made) before this date, it is exempt from this requirement. Please see guidance here, which confirms this position: https://www.gov.uk/guidance/biodiversity-net-gain-exempt-developments

As mentioned, the development achieves a BNG of 8%, through the introduction of on site biodiversity, including biodiverse roofs that have been designed to 'mimic' the biodiversity currently on site (ecomimicry), and the biodiversity has been maximised as far as possible, having regard to other requirements (e.g. playspace, roof design, PVs, car parking etc.). The proposed approach is the most beneficial in terms of ecology and biodiversity as it ensures a biodiversity net gain by acknowledging that while the open mosaic habitat naturally diminishes over time, the proposed new development allows for the creation and sustained management of a diverse habitat over the long term, therefore securing positive long term benefits. At 8% the development delivers 'net gains' in accordance with the NPPF and London Plan Policy G6. I reattached the Ecology Assessment, which sets this position out in more detail.

I hope the above is of assistance, but look forward to hearing your thoughts on the above.

Kind regards,

[redacted]
Planning Associate
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From: [redacted] <[redacted]london.gov.uk>
Sent: Wednesday, February 14, 2024 3:26 PM
To: [redacted] <[redacted]wsp.com>
Cc: [redacted] <[redacted]berkeleygroup.co.uk>; [redacted] <[redacted]wsp.com>; [redacted] <[redacted]merton.gov.uk>; [redacted] <[redacted]london.gov.uk>
Subject: RE: Mitcham Gasworks - Amended application submission pack

Hi [redacted]

Please see below response from green infrastructure colleagues:

The previous GLA Stage 2 response (dated 05/01/2024) requests that the applicant reviews urban greening within the proposed scheme, seeking to improve quality and quantity, to increase the applicant's UGF score of 0.38 to above the target of 0.4. The applicant's response states that 0.38 is the maximum achievable figure, after providing justification as to why further opportunities for urban greening cannot be provided. This is now a planning matter.

The previous GLA Stage 2 response requests review of urban greening in relation to Fire Safety Guidance. The response states that the green walls do not form part of the buildings and would not extend above 2 metres in height, such that their review concludes that this would not raise any issues in terms of fire safety. The applicant should confirm that the green walls are compliant with guidance here: https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance/fire-safety-lpg .

The response states that the scheme originally targeted 13% Biodiversity Net Gain (BNG) on site. However, since the site was originally surveyed, the presence of open mosaic habitat has emerged, which has a higher baseline value than originally expected. As such, the resultant Biodiversity Net Gain is now 8%. This is concerning as the net gain is now under the mandatory 10% BNG targets set to be released on the 12th February 2024. The proposed development should improve their BNG to at least the mandatory 10% or higher if there are higher local targets. This should be reviewed as soon as possible.

I am happy to advise that the UGF point can be resolved now as it is only a minor non-compliance acknowledging the wider benefits of the scheme. I would encourage further work to raise the BNG in line with the new targets and work through local ecology matters with Merton.

Please note I am on leave from 17 February – 5 March. My colleague [redacted] (CC'd) can be contacted if you had any consultee requests that she can pass on.

Kind regards,

[redacted]
Senior Strategic Planner – Development Management
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From: [redacted]
Sent: Tuesday, February 6, 2024 5:51 PM
To: [redacted] wsp.com>
Cc: [redacted] berkeleygroup.co.uk>; [redacted] wsp.com>; [redacted] merton.gov.uk>
Subject: RE: Mitcham Gasworks - Amended application submission pack

Hi [redacted]

Apologies I did not return your call today, I have been in and out of meetings.

I have forwarded your email to green infrastructure colleagues and awaiting their response. I will let you know if I need clarification on any matters.

Kind regards,

[redacted]
Senior Strategic Planner – Development Management
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From: [redacted] wsp.com>
Sent: Friday, February 2, 2024 5:06 PM
To: [redacted] london.gov.uk>
Cc: [redacted] berkeleygroup.co.uk>; [redacted] wsp.com>; [redacted] merton.gov.uk>
Subject: RE: Mitcham Gasworks - Amended application submission pack

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Hello [redacted]

Thanks for sending through the updated comments in relation to energy and sustainability. We are reviewing these with the energy consultants and will provide a response as soon as possible, to close out the two remaining technical queries.

I also wanted to touch upon our discussion last Friday with regards to the comments received from your Green Infrastructure colleagues.

BNG

Following the justification provided with regards to BNG trading rules provided at paragraph 5.3.36 of the Ecological Assessment, submitted December 2023, your GI colleagues have no additional comments on this. For context, the relevant paragraph reads:

5.3.25 It is noted that the Summary Sheet states that the trading rules which form an intrinsic part of the metric assessment process are not satisfied in this
instance. The trading rules element of the metric is intended to avoid the replacement of habitats which are of a specific distinctiveness ('ecological
value') with more habitat of a lower distinctiveness – i.e. providing more poor quality grassland to mitigate for the loss of good quality grassland, for
example.

5.3.36. In this instance, the reason for the error arises due to the fact that there are some losses to open mosaic habitats and scrub habitats within the scheme.
The areas of scrub are replaced with new tree planting, which is of equivalent distinctiveness, but as this habitat falls under a different broad

habitat category ('urban' as opposed to 'heathland and scrub'), an error is flagged. Furthermore as outlined above open mosaic habitat will be
replaced with biodiverse green roofs which will provide functional habitats in the future.

As discussed, I understand that your colleagues have no further comment on the above and that this matter is now passed to you for your planning consideration. As above, the trading rules error is raised merely as a technicality, but the onsite biodiversity is proposed to be replaced with equally distinctive habitats, suitable for the scheme.

As also discussed on the phone, the scheme originally targeted 13% BNG on site. However, since the site was originally surveyed, the presence of open mosaic habitat has emerged, which has a higher baseline value than originally expected and as such the maximum BNG that the resultant BNG is now 8%. This is still evidently a measurable net gain in biodiversity, and will be secured for the lifetime of the development and actively managed in line with a landscaping management plan. As set out at Section 6 of the Habitat Retention Feasibility Statement, appended to the Ecological Assessment, this is a far better outcome compared to the open mosaic habitat currently present on site, which will gradually decrease in biodiversity value through natural succession.

As such, in line London Plan policy G6, net gains for biodiversity are secured. I hope this helps clarify this position, but do let me know if you have any further questions on this element of the scheme.

<u>UGF</u>

Whilst green walls are shown on the UGF calculation, these do not form any part of the buildings on site. The green wall is associated with an element of the PRS wall, which is separate from any buildings, would cover only a small distance and not extend above 2m. This should therefore not raise issue from a fire safety perspective, but do let us know if you require anything further from us on this point.

With regards to UGF, the scheme as originally submitted was 0.31. As part of the scheme amendments, opportunities to increase this have been investigated and UGF score has been increased to 0.38, which represents a significant improvement upon the existing site condition, and maximises greening without compromising design quality and intent. The DAS Addendum explains that to reach the target 0.4 UGF, the pitched roofs on Western Road could be replaced with biodiverse roofs. However, it is felt that the pitched roofs are an important architectural feature that provide interest and variety in the proposals and should remain. Alternative opportunities to increase UGF to reach 0.4 are limited due to the vehicle access and parking requirements, as well as the gas mains that runs through the centre of the site which limits the type of planting that can be used.

Therefore, whilst marginally falling short of the target, the proposed UGF score of 0.38 is the maximum achievable figure. We consider this to be in accordance with policy G6 but welcome your thoughts on this.

<u>Urban Design</u>

Whilst we didn't discuss this in detail, we have sought to address the urban design comments raised in the Stage 1 report in our amended scheme, which includes a reduction in height through set backs along the northern perimeter (Portland Road) and increasing the dual aspect units to 79%, along with layout and landscaping amendments to address privacy. I understand from our discussion, that the urban design matters raised at Stage 1 were minimal and from your perspective these have been addressed.

I hope the above provides sufficient clarification on BNG and UGF, to enable you to take these into consideration in your planning judgement, but please do let me know if you have any further questions or would like to discuss.

Kind regards,

[redacted]
Planning Associate
MTCP MRTPI

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From: [redacted] <[redacted]london.gov.uk>
Sent: Monday, January 29, 2024 9:45 AM
To: [redacted] <[redacted]wsp.com>
Cc: [redacted] <[redacted]berkeleygroup.co.uk>; [redacted] <[redacted]wsp.com>; [redacted] <[redacted]merton.gov.uk>
Subject: RE: Mitcham Gasworks - Amended application submission pack

Hi [redacted]

I have received responses on the energy, WLC and CE spreadsheets. Please see attached.

WLC – all matters resolved. Recommended condition is as follows:

Prior to the occupation of each building the post-construction tab of the GLA's whole life carbon assessment template should be completed accurately and in its entirety in line with the GLA's Whole Life Carbon Assessment Guidance. The post-construction assessment should provide an update of the information submitted at planning submission stage, including the whole life carbon emission figures for all life-cycle modules based on the actual materials, products and systems used. This should be submitted to the GLA at: ZeroCarbonPlanning@london.gov.uk, along with any supporting evidence as per the guidance. Confirmation of submission to the GLA shall be submitted to, and approved in writing by, the local planning authority, prior to occupation of the relevant building.

Reason: In the interests of sustainable development and to maximise on-site carbon dioxide savings.

Energy – one point remaining on proposed PV array

CE – most matters resolved. *Comment: The additional information provided at this stage allows for several of the outstanding comments to be closed out. It is requested that the Applicant provide more detail within the reused and recycled content calculation per the methodology set out in Appendix 3 of the LPG, particularly where this does not meet the 20% target. Similarly the current strategy does not illustrate that the operational waste targets will be met. The Applicant should provide clarification as to how the strategy proposed will adapt to ensure this is met by 2030.*

Please let me know if you have any questions.

Kind regards,

[redacted]
Strategic Planner – Development Management
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From: [redacted] <[redacted]wsp.com>
Sent: Tuesday, January 16, 2024 5:03 PM
To: [redacted] <[redacted]london.gov.uk>
Cc: [redacted] <[redacted]berkeleygroup.co.uk>; [redacted] <[redacted]wsp.com>; [redacted] <[redacted]merton.gov.uk>
Subject: RE: Mitcham Gasworks - Amended application submission pack

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Hello [redacted]

Thank you for sending across the consultee responses from TfL, circular economy, flood risk/drainage and green infrastructure.

With regards to Circular Economy, and further to our recent discussion on energy/sustainability more generally, I attach the most up to date versions of the various GLA spreadsheets. As part of the amended application pack submitted in December, we included updated versions of the various energy/sustainability reports, as well as updated d GLA carbon emission reporting spreadsheet and an updated circular economy spreadsheet (which we have since updated following the below comments). We now also submit the additional associated spreadsheets attached, as listed below:

- WLCC Memo – updated responses provided
- Carbon Emissions Spreadsheet (as submitted December 2023)
- Be Seen Spreadsheet – revised spreadsheet
- Be Seen Webform – confirm that this has been submitted online
- WLCC GLA Spreadsheet – minor text amends in Bill of Materials
- Energy Memo – updated responses provided to address any remaining outstanding issues.
- Circular Economy Statement – updated January 2024 (update driven by GLA comments and to align with CE Spreadsheet/memo)
- Circular Economy Spreadsheet – updated to address comments received yesterday
- Circular Economy Memo – updated responses to address comments received yesterday

I trust these are of assistance. Please do let us know if you have any comments or questions on the attached.

Kind regards,

[redacted]
Planning Associate
MTCP MRTPI

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Sent: Monday, January 15, 2024 4:14 PM
To: [redacted] <[redacted]wsp.com>
Cc: [redacted] <[redacted]berkeleygroup.co.uk>; [redacted] <[redacted]wsp.com>; [redacted] <[redacted]merton.gov.uk>
Subject: RE: Mitcham Gasworks - Amended application submission pack

Hi all,

Please see attached TfL's response to the latest set of information.

Kind regards,

[redacted]
Strategic Planner – Development Management
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Cc: [redacted] <[redacted]berkeleygroup.co.uk>; [redacted] <[redacted]wsp.com>; [redacted] <[redacted]merton.gov.uk>
Subject: RE: Mitcham Gasworks - Amended application submission pack

Hi [redacted]

I have received some consultee responses from colleagues on the most recent submission.

Circular economy – documents are largely [redacted] compared to the documents previously reviewed. Please see attached with points to be addressed.

Flood risk / drainage – all matters resolved.

Green infrastructure -

The previous GLA Stage 1 response (dated 01/03/23) states that the applicant should provide a review of urban greening, in relation to fire safety guidance. This does not appear to have been provided and green walls are still included within the urban greening factor calculation on page 62 of the Design and Access Statement Addendum. Please further back to Stage 1 comments and provide a review of urban greening in relation to London Plan Guidance on Fire Safety as soon as possible. For further information see: https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance/fire-safety-lpg

The urban greening factor calculation on page 62 of the Design and Access Statement Addendum states that the proposed development achieves a UGF score of 0.38, which is below the target set by Policy G5 of the London Plan. The applicant should review the urban greening proposed, seeking to improve the quality or quantity, to increase the application's UGF. If the target score cannot be achieved, the applicant should set out robust justification.

The GLA Stage 1 response requests clarification regarding trading rules in relation to Biodiversity Net Gain (BNG). In their response (15/12/23) the Mitcham Gasworks Ecological Assessment (pg. 22, para. 5.3.36) provides justification as to why trading rules have not been satisfied. This is now a planning matter.

At present, the proposed development cannot be considered to be compliant with green infrastructure policy.

I have CC'd [redacted] for her information. Please let me know if you have any queries.

Kind regards,

[redacted]
Strategic Planner – Development Management
GREATER**LONDON**AUTHORITY
169 Union Street, London SE1 0LL
[redacted] london.gov.uk
079 [redacted]

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From: [redacted] <[redacted] wsp.com>
Sent: Wednesday, January 3, 2024 5:12 PM
To: [redacted] <[redacted] london.gov.uk>
Cc: [redacted] <[redacted] berkeleygroup.co.uk>; [redacted] <[redacted] wsp.com>
Subject: RE: Mitcham Gasworks - Amended application submission pack

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Hi [redacted]

Ahead of the call tomorrow morning, we thought it might be useful to send you a summary of the energy/sustainability [redacted] and how these address the GLA comments – please see attached.

As part of the amended application pack submitted to you in December, we included updated versions of the various energy/sustainability reports, as well as updated d GLA carbon emission reporting spreadsheet and an updated circular economy spreadsheet. Would it also be useful to have an updated GLA Memo spreadsheet, and Be Seen spreadsheet and for us to send these to you, along with the energy/sustainability reports for you to forward onto your energy colleagues? With regards to the Be Seen webform – this was submitted back in June, but do we need to update this to reflect any updated information as of December 2023? Happy to pick these points up for discussion in our call tomorrow.

Kind regards,

[redacted]
Planning Associate
MTCP MRTPI

T +44 (0)[redacted]

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From: [redacted] <[redacted]london.gov.uk>
Sent: Tuesday, January 2, 2024 1:35 PM
To: [redacted] <[redacted]wsp.com>
Cc: [redacted] <[redacted]berkeleygroup.co.uk>; [redacted] <[redacted]wsp.com>
Subject: RE: Mitcham Gasworks - Amended application submission pack

Hi [redacted]

Thanks and same to you!

I can do this Thursday 11-12 if that works for you? Feel free to send a Teams invite.

Kind regards,

[redacted]
Strategic Planner – Development Management
GREATER**LONDON**AUTHORITY
169 Union Street, London SE1 0LL
[redacted]london.gov.uk
079[redacted]

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From: [redacted] <[redacted]wsp.com>
Sent: 02 January 2024 12:21
To: [redacted] <[redacted]london.gov.uk>
Cc: [redacted] <[redacted]berkeleygroup.co.uk>; [redacted] <[redacted]wsp.com>
Subject: RE: Mitcham Gasworks - Amended application submission pack

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Hi [redacted]

Happy New Year! I hope you had a good break.

As discussed in December, we would like to set up a meeting with you to take you through our submitted amendments for LPA application ref. 22/P3620.

How is your availability for a Teams call looking this week? Would Thursday suit? We have availability for any time except between 10 – 11 and 3 – 3:30. Do let me know if any of these times of Thursday work, or feel free to suggest an alternative day if Thursday isn't suitable.

Kind regards,

[redacted]
Planning Associate
MTCP MRTPI

T +44 (0)[redacted]

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From: [redacted]
Sent: Thursday, December 14, 2023 5:33 PM
To: [redacted] <[redacted]london.gov.uk>
Subject: Mitcham Gasworks - Amended application submission pack

Hi [redacted]

As discussed, on Friday 8 December, we submitted amended application documents to LB Merton under LPA application ref. 22/P3620. The submission documentation is listed in the attached covering letter, and enclosed in the WeTransfer link below. The main [redacted] are summarised in the Planning Statement Addendum and Design and Access Statement Addendum.

https://we.tl/t-f253MizyHM

Please let me know if you have any issues accessing any of the drawings.

As discussed, LBM will reconsult on the documents in the New Year, once the Christmas period is out of the way. Once the applicant is back from leave in January, we will set up a call with you to take you through the proposals, but if you do have any questions before then, I will be around Monday-Wednesday next week, so feel free to give me a call / drop me an email.

If I don't speak to you have a great Christmas and New Year.

Kind regards

[redacted]
Planning Associate
MTCP MRTPI

T +44 (0)[redacted]

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WLC Memo: GLA Consultation

Case details

Date of first review:	02/06/2023
Case Name:	Mitcham Gas works
Case Number:	2023/0195
Case Officer:	[redacted]
London Borough:	Merton
Application Type (Outline/Hybrid/Detailed):	Detailed
Applicant:	St William Homes LLP
WLC Consultant:	Hodkinson Consultancy (R Rust)
Document Title:	- WLCCE GLA Spreadsheet - v.1 - 09.12.2022 (1)
Document Date:	09.12.2022

Development proposals

Use	Floorspace/Number of units
C3	59,219 m^2
	m^2
	m^2

	London Plan: Policy SI 2 of the London Plan requires planning applicants to submit a Whole Life-Cycle Carbon (WLC) assessment: https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf	
	Guidance and assessment template: Applicants should follow the GLA 'Whole Life-Cycle Carbon Assessments Guidance - March 2022 and the GLA WLC assessment template (https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance/whole-life-cycle-carbon-assessments-guidance) which should be completed in full and submitted as an Excel document. Applicants should ensure they are familiar with the guidance in preparation for submitting their planning application.	
	The following comments set out how the applicant's planning application stage WLC assessment complies with the policy and guidance.	
GLA Review_02/06/23		**Applicant's response**
General compliance comments		
1	The applicant has provided all information within the project details section of the template under the Detailed planning stage tab, in line with the GLA Whole Life-Cycle Carbon Assessment guidance document.	
2	The assessment method stated does conform with BS EN 15978 and 'RICS Professional Statement and guidance, Whole Life carbon assessment for the built environment' (RICS PS) as set out in the GLA Whole Life-Cycle Carbon Assessment guidance document.	
3	The applicant has confirmed that the operational modelling methodology for Module B6 results follows SAP. The applicant should confirm if TM54 is being followed for the commercial spaces.	Currently, the commercial spaces have not been assessed using TM54, SBEM has been used.
4	The assessment has been completed with a reference study period of 60 years.	
5	The software tool used is listed in Appendix 1 of the GLA Whole Life-Cycle Carbon Assessment guidance document. The applicant has provided confirmation that the tool used follows BS EN 15978 and covers modules A-C as a minimum.	
6	The source of carbon data for materials and products, and EPD database stated within the assessment does come from acceptable sources as set out in the GLA Whole Life-Cycle Carbon Assessment guidance document.	
7	The applicant has confirmed that 95% of the cost allocated to each building element category has been accounted for in the assessment. The applicant should provide details/evidence of the review process undertaken to confirm that 95% of the cost per building element category has been modelled.	Yes - The client confirmed that 95% of the cost allocated to each building element category has been included.
8	The applicant should provide explanation of the third-party verification mechanisms that have been adopted to quality assure the assessment.	All work completed by a competent individual [redacted] - BSc, MSc, CEnv, MIEMA) who has undertaken multiple LCAs for GLA compliance. She is suitability competent to undertake the work. Her work was checked was [redacted] (MEng (Hons), CEng, MIMechE) who was not involved in the project and undertook a detailed QA of the assessment to ensure it was accurate, in line with information received and compliant with the GLA guidance.
9	The applicant has given permission for the GLA to submit the assessment to the Built Environment Carbon Database.	
Estimated WLC emissions		
10	The applicant has provided results that cover all of the life-cycle modules (A1-A5, B1-B5, B6-B7, C1-C4 and D).	
11	The applicant has provided results that fall within the WLC benchmarks and has reasonably explained the reasons for any divergences from the WLC benchmark.	
Retention of existing buildings and structures		
12	The applicant has confirmed that options for retaining the existing buildings and structures have been fully explored before considering substantial demolition.	
13	The applicant has provided the pre-construction demolition carbon related emissions.	
14	The applicant has confirmed the percentage estimates of the new building development which will be made up of existing elements is 0%	
Key actions and further opportunities to reduce whole life-cycle carbon emissions		
15	The applicant should provide details of the main actions with the biggest impacts which have informed this stage of the assessment. Since the results almost achieve the aspirational benchmarks for modules A1-A5, the applicant should be able to provide more than one action taken to reduce the embodied carbon of the proposed development to near the aspirational benchmarks, especially considering retention is not significant on-site.	Updated in GLA spreadsheet
16	The applicant has provided details of further potential opportunities which could be investigated as the design progresses, but which don't currently contribute towards the emissions reported in this WLC assessment.	
17	The applicant has provided an estimation of the WLC reduction ($kgCO_2e/m^2$ GIA) for all actions and further potential opportunities stated within the template.	
Material quantity, assumptions and end of life scenarios		
18	The applicant has mostly completed the material quantity and end of life scenarios table in full. See comments below.	
19	All material types and quantities have been provided for all the applicable building element categories and align with the Assessment table.	
20	Assumptions made with respect to replacement cycles (Module B) have been stated. Assumptions made with respect to maintenance and repair should also be stated but it appears that the GLA recommendations are used.	
21	Material 'end of life' scenarios (Module C) has been filled out for all applicable significant materials. The BoM should align with the projects separate Circular Economy Statement. The substructure and stair quantities do not quite align.	Updated in CE spreadsheet
22	The applicant has provided an estimated mass (kg) of reusable and recyclable materials for each building element category.	
23	The applicant has provided details of the refrigerants (name, charge, annual leakage rate, GWP, end of life recovery rate). However, the leakage and end of life do not align with the TM65 calculation.	Updated, typo.
GWP potential for all life-cycle modules		
24	The applicant has completed the template table completely and all results do seem within a reasonable range.	

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Circular Economy: GLA Consultation

Case Details

1	Development Name	Mitcham Gasworks
2	Applicant	St William Homes LLP
3	London Borough	London Borough of Merton
4	Case Officer	[redacted]

Planning Application: Proposal

Full planning application for the erection of new buildings to provide residential accommodation (Class C3) and flexible commercial/community space (Class E and/or Class F2), with associated access, parking and landscaping arrangements, including the demolition of the existing telecommunications mast and re-provision of new telecommunications mast

N.B - the applicant's proposals as currently submitted are for a scheme comprising 595 flats in 6 blocks ranging between 5 and 9 storeys with 135 parking spaces, vehicle access from Western road and Portland road and with 363 sq.m of flexible community/commercial floorspace

Planning Application: Uses - Floorspace

1	C3	58837	m^2
2	E	382	m^2
3			m^2
4			m^2
5			m^2
6			m^2
7			m^2
8			m^2
9			m^2
10			m^2
11			m^2
12			m^2
13			m^2
14			m^2
15			m^2
	TOTAL	**59219**	**m^2**

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Full Application - Circular Economy Statement

GLA STAGE 1

Document Information		Additional Information
1 Date of Review	01/06/2023	1.1.1 23F3620_Planning Statement
2 Document Title	23F3620 Mitcham Gas Works - Circular Economy Statement April 2023	1.2.23F3620_Circular Economy Statement
3 Author(s)	Hodkinson Consultancy	1.2.23F3620_Operational Waste Management Strategy
4 Document Date	Apr-23	2.1 Mitcham Gas Works - Circular Economy Statement April 2023
		2.3 Mitcham Gas Works - WLCCE GLA Spreadsheet - v 1 - 09.12.2022
5 Template Submitted (Y/N)	Y	

Date of Applicant's Response	08.06.2023
Date of GLA Response	27/06/2023
Date of Applicant's Response	

GLA Stage 1 Comments

No	Title	Description	Action Required	Applicant's Stage 1 Response	GLA Post Stage 1 Response	Applicant's Post Stage 1 Response
		Please provide a revised version of the Circular Economy Statement (written report and/or GLA CE template) that incorporates the additional required information, according to the comments below.		Updated - June 2023	The responses in the memo are welcomed. Please provide a revised version of the Circular Economy Statement (written report and/or GLA CE template) that incorporates the additional required information, according to the comments below.	Please respond here.
0	**Policy and Guidance**	London Plan Policy SI7 requires development applications that are referable to the Mayor of London to submit a Circular Economy Statement, whilst Policy D3 requires development proposals to integrate circular economy principles as part of a design led approach. Applicants should follow the London Plan Guidance: Circular Economy Statements (March 2022) to produce a written Circular Economy Statement and demonstrate how the development proposals have been developed in line with the GLA guidance and submit this as an Excel document with the written report. Applicants should ensure they are familiar with the guidance in preparation for submission these planning applications. **The Applicant is required to submit a Circular Economy Statement in line with the policy and current guidance.**	It is welcomed that the Applicant has provided a Circular Economy Statement, in line with the adopted London Plan Guidance: Circular Economy Statements (March 2022), including the completed CE template and an accompanying written report. Please refer to the below for detailed comments.	See below for responses	It is welcomed that the Applicant has provided an updated Circular Economy Statement and CE template and an accompanying written report. Please refer to the below for detailed comments.	
1	**Development Details**	The Applicant has provided description of the development.	Nothing further is required.			
1	**Development Details**	The Applicant has provided details of the proposed development in the template, including gross internal floor area (GIA).	Nothing further is required.			
2	**Design Approach**	The Applicant has **partially** defined the design approach for the existing site.	The applicant must provide a response to the applicable phase/building/area/layer as outlined in the Circular Economy approaches for existing structures and buildings in the CES spreadsheet. Where an approach hasn't been defined, it is required the applicant provides narrative around this and how the design team aim to address this. It is noted that the site has been cleared prior to St Williams involvement and ownership. It is advised further description of the existing site is provided including images to demonstrate the current conditions.	See 'existing buildings' part of the report for an update.	It is welcomed the applicant has provided further information within the report. As per the previous comment, it is required the applicant confirms the phase/building/area/layer fields which the existing design approach and strategic responses are applicable too.	Please respond here.
2	**Design Approach**	The Applicant has **partially** defined the design approach for the new buildings, infrastructure and layers over the lifetime of the development.	Whilst it is acknowledge the strategy to the new buildings has been confirmed via the reporting template, the Applicant must provide a response to the applicable phase/building/area/layer as outlined in corresponding guidance (see Figure 51 and/or 'set out strategic responses accordingly. The Applicant should further explore how each of the design approaches will be applied to suit the requirements of each of the building types / layers across the Site where this is expected to vary.	Updated in CE spreadsheet	It is welcomed the applicant has provided further information within the report. As per row 28, it is required the applicant confirms the phase/building/area/layer fields which the design approach and strategic responses are applicable too for the proposed building.	Please respond here.
3	**Pre-Redevelopment Audit**	The Applicant **has not** provided a Pre-Redevelopment Audit assessing the existing site, including any buildings, structures and materials.	It is noted that the site was cleared prior to St William's involvement and ownership of the site, and therefore a pre-demolition audit and pre-redevelopment audit is not required and has not been undertaken by St William. Nothing further is required.			
3	**Pre-Demolition Audit**	The Applicant **has not** provided a Pre-Demolition Audit to define an inventory of the materials in the building to be managed upon demolition and identify components of the building which can be reused or recycled.	It is noted that the site was cleared prior to St William's involvement and ownership of the site, and therefore a pre-demolition audit and pre-redevelopment audit is not required and has not been undertaken by St William. Nothing further is required.			
4	**Design Principles**	The Applicant has **partially** summarised the key commitments in the Circular Economy Design Principles by Building Layer.	The applicant should update the table ensuring key commitments are specified for each of the Circular Economy Design Principles by Building Layer in the template. The Applicant should also complete the 'Summary', 'Challenges', 'Actions & Counter-Actions, Who and When' and 'Plan to Prove and Quantify' columns for all of the design principles, where these will support the development of the strategy post-planning.	Updated in CE spreadsheet	The additional information is welcomed. As per previous comment it is required the Applicant ensure all fields in the 'Summary', 'Challenges', 'Actions & Counter-Actions, Who and When' and 'Plan to Prove and Quantify' columns for all of the design principles, where these will support the development of the strategy post-planning, are **completed in full**, where these will support the development of the strategy post-planning, are fully completed.	Updated in CE spreadsheet.
4	**Design Principles**	Many of the commitments are considered standard practice. The template states that the response should consider where the Applicant seeks to go beyond standard practice.	The Applicant should consider key circular economy commitments that go beyond standard practice.	Section 3.4.2 of the guidance notes that 'A compliant CE statement is one that has fully addressed and met the requirements of the Circular Economy guidance', and that developers are encouraged but not required to undertake practice that go beyond the compliant standard. St William have, in areas, gone beyond the minimum as highlighted in the CE statement: - Total reduction in regulated CO2 emissions of 56% which is beyond the required 35%. - St William LLP have undertaken studies on recycled content in concrete. The aim is to increase cement replacement to as high as technically feasible i.e. less than 50% for substructure and up to 60-70% for the superstructure. For steel, a 18-26% recycled content is targeted in line with current advice from British Steel.	It is acknowledged that the Applicant has gone above the minimum requirements in areas. The GLA would like the Applicant to continue to encourage the team to develop and define the principles outlined, ensuring clear measurable metrics and targets are set in order to monitor and integrate the commitment into the design moving forward. Nothing further is required.	
5	**Bill of Materials**	The Applicant has **partially** completed the Bill of Materials including metrics through module stages A to D.	The Applicant should ensure that the Bill of Materials presented in the GLA CE template is aligned with the information provided in the WLCA per Section 1.2.1 of the GLA guidance, the Applicant should ensure that any updates are reflected across both reporting submissions. It is noted that the material intensity of the building element category's very high for Superstructure (Windows, External Doors and External walls). The Applicant should review and provide clarification, including revision as necessary.	The latest GLA WLC spreadsheet was not used. Both now align.	The applicants comments are noted. The applicant is required to ensure the following columns are fully completed: - Construction waste factor (Module A) (Column I). - Recycled content (Column J). - Recycled content by value (Column L). - Construction waste factor (Module B) (Column P). Please ensure the row 455 are fully reported where required.	The additional information is welcomed. It is noted that the material intensity of the roof and fabric is high. The Applicant should review and provide clarification, including revision as necessary. The Applicant should complete the Construction Waste Factors in the Bill of Materials in the GLA CE template.	The quantities have been provided in line with the Whole Life Cycle Assessment, in which building materials were provided by the Applicant, including roof areas and materials.	The Applicant's response is welcomed. Where the material intensity of the roof and fabric remains high. The Applicant is encouraged to consider any design reasons for this. Per the previous comment, the Applicant should complete the Construction Waste Factors in the Bill of Materials in the GLA CE template.	The roof buildup is based on the standard green roof specification. Roof insulation is required to ensure the proposed development performs in line with the energy performance requirements for the site, which will increase the material intensity of the roof to ensure improved operational performance of the development. The template has been updated to include the Construction Waste Factor.	The additional information is welcomed. It is noted that the total quantity of material represented by this calculation does not align with the Bill of Materials provided, the Applicant should provide clarification. Where it is noted that the reused and recycled content calculated does not demonstrate compliance with the GLA Policy target for a minimum of 20% reused and/or recycled content at the current stage. The Applicant is strongly encouraged to set out key opportunities which will be explored through detailed design in order to address this.	It is unclear what this comment is referring to. As the 20% figure refers to recycled content by value, the quantity would not be representative of the total value of recycled content. The BoM is a list ship level and not per LCA. However, when all the cells are selected within columns I-K the BoM of Materials, the value is 19.9 for the average recycled content. This is also the value that is derived from the One Click LCA Building Circularity tool. A series of measures that will be explored at the next stage in order to increase the recycled content to 20% has been provided in the main report in parts 5.17.	The additional information is welcomed. Per the previous comment, it is noted that the Bill of Materials represents a total of ~106,500,000kg compared to ~110,900,000kg reported in the reused and recycled content calculation in the written report. The Applicant should provide clarification as to the reasons for the difference between the calculation provided and the Bill of Materials reported. This information has not been located within the revised reporting. Per the previous comment, where it is noted that the reused and recycled content calculated does not demonstrate compliance with the GLA Policy target for a minimum of 20% reused and/or recycled content at the current stage. The Applicant is strongly encouraged to set out key opportunities which will be explored through detailed design in order to address this.	Please respond here.
6	**Recycling and Waste Reporting**	The Applicant **has not** provided a breakdown of waste management routes in the Recycling and Waste Reporting table which demonstrates compliance with London Plan Policy SI 7 targets for diversion of 95% (by weight/tonnage) construction and demolition waste from landfill and 95% (by weight/tonnage) beneficial reuse of excavation waste.	Provide a breakdown of the expected waste management routes for each of the waste streams which demonstrate compliance with London Plan Policy SI 7 targets for diversion of 95% (by weight/tonnage) construction and demolition waste from landfill and 95% (by weight/tonnage) beneficial reuse of excavation waste.	Updated in the table	As per previous comment. Please provide a breakdown of the waste management routes for the Excavation, Construction and Municipal waste estimates provided.	Per the previous comment, the Applicant should provide a breakdown of the expected waste management routes in the Recycling and Waste Reporting table for each of the waste streams. These should demonstrate compliance with the GLA policy targets and demonstrate how residual value will be maximised in line with the Circular Economy and Waste Hierarchies.	Updated in CE spreadsheet.	The additional information is welcomed. Nothing further is required.				
7	**Operational Waste**	The Applicant has **partially** provided an Operational Waste Management Plan to demonstrate how the proposed development will achieve the relevant targets and meet requirements of London Plan Policies D3, SI 7 and D6.	It is require the Applicant provides further information around the listed items below: • Provide evidence to demonstrate how operational performance will be monitored and reported. • The waste measures such as the application of consolidated, smart logistics and community-led waste minimisation schemes has been explored.	The only operational waste management plan produced to date is what has been appended to the CE report. This is significantly more detailed than other operational waste management plans provided at this early stage and is deemed sufficient. This will be updated and refined as the design progresses. Additional information on operational monitoring has been provided in 5.69 - 5.71 of the updated CE report.	It is expected that the OWMP will be developed throughout the project programme in order to reflect any [redacted]. As per previous comment at this stage, the Applicants must demonstrate that the listed measures below have been considered in order to ensure initial thought into this has been considered and will not be missed in the latest stages of the programme. - How operational performance will be monitored and reported. - That waste measures such as consolidated, smart logistics and community-led waste minimisation schemes have been explored.	Per the previous comment, the Applicant should demonstrate the following at this stage: - How operational performance will be monitored and reported. - That waste measures such as consolidated, smart logistics and community-led waste minimisation schemes have been explored.	Please see Section 5.72 of the Circular Economy Report.	The additional information is welcomed. Nothing further is required.				
7	**Operational Waste**	The Applicant has **partially** included a commitment to meet or exceed the London Plan Policy SI7 municipal waste recycling target of 65% (by weight/tonnage) by 2030 or business waste recycling target of 75% (by weight/tonnage) by 2030.	It is noted the applicant has provided a commitment to meet or exceed the London Plan Policy SI 7 municipal waste recycling target of 65% (by weight/tonnage) by 2030. It is unclear from the information provided as to whether the business waste recycling target of 75% (by weight/tonnage) by 2030 has been considered. Applicant to confirm.	This was noted and included in the list of targets in section 5.4 and in section 5.69.	The applicants response is noted. It is noted in the report sect 3.12 - *The London Borough of Merton recommends that 50% of waste storage capacity be allocated for residual waste, and 50% for mixed recycling.* Whilst it is noted the applicant's acknowledged the targets for 75 per cent recycling for business waste, it is noted the applicant has applied a 50:50 split between residual and recycling for in order to ensure a 25/75 per cent split is accommodated for within the base build, and not just the 50 per cent split as required by LBM. Applicants required to demonstrate that sufficient space allocations have been allowed for in order to ensure the 25/75 per cent split can be accommodated.	Per the previous comment, the Applicant should demonstrate how the recycling rates defined by the London Plan and London Environment Strategy will be facilitated.	Pages 14 - 16 of the Operational Waste Management Strategy outline how the non-residential waste will be managed. Currently, 50% recycling is targeted. This is expected to increase to 75% by 2030. Table 4.7 of the OWMS outlines the space requirements to achieve this.	The Applicant's response is welcomed. However, where it is noted that the current proposals do not illustrate the 65% and 75% recycling rates for municipal waste and business waste respectively to be met, the Applicant should provide explanation was to how the strategy will facilitate these being met by 2030.	Increasing the recycling rates will naturally also result in a decrease in the non-recyclable waste. In terms of spatial provisions, there should be [redacted] in a reduction in non-recyclable bins will be offset with an equivalent increase in recycling bins by 2030	The additional information is welcomed. The Applicant should ensure this response is reflected in the reporting.	This has been updated in the report.	The Applicant's response is welcomed. However, this information has not been located within the revised reporting.	Please respond here.
8	**Circular Economy Targets**	The Applicant has provided a commitment to targets for demolition waste, excavation waste, construction waste, municipal waste and reused/recycled content in line with GLA policy.	Nothing further is required.			
9	**Circular Economy Targets**	The Applicant has **partially** provided a brief explanation of how performance against each of the key policy targets will be secured through design, implementation and monitoring.	It is welcomed that the applicant has committed to exceed the requirement to ensure a minimum of 20% of the building material elements to be comprised of recycled or reused content. It is advised the BOM table is updated in order to reflect this commitment and ensure the target has already been achieved based on the current design.	This level of detail is not yet available. It will be provided in the next update of the CE statement.	The applicants response is noted. The response included in the CES reporting template states: The Applicant is committed to a target a benchmark of 25% reused or recycled content by value., where feasible. A detailed Bill of Materials will be provided at a later stage. The Applicant is required to update Column K and L in the BOM table in order align and demonstrate with their commitment to ensure 25% of the building material elements to be comprised of recycled or reused content. See row 28	Please refer to the comments in Rows 28 and 53 with respect to the reused and recycled content calculations.				
9	**Post-Construction Report**	The Applicant has **partially** acknowledged acceptance for a Planning Condition to submit a Post-Construction Report to the relevant local authority and the GLA at circulareconomystatements@london.gov.uk	Please acknowledge acceptance for a Planning Condition and set out an indicative timescale and responsible party for the provision of this information.	Post Construction to take place in Quarter 4 of 2030.	The additional information is welcomed. As per previous comments, it is required the Applicant confirms the indicative timescale and responsible party for the provision of this information.	Per the previous comment, the Applicant should also confirm the party responsible for the provision of this information.	Post Construction to take place in Quarter 4 of 2030. The Applicant will ensure a suitably qualified individual is appointed to undertake the post construction work as the design progresses.	The additional information is welcomed. Nothing further is required.			
10	**End-of-life strategy**	The Applicant has **partially** provided an End-of-Life Strategy, including how this will be communicated to future building owners, managers and occupiers and how the building information will be stored.	It is noted the Applicant has provided a narrative surrounding the End of Life Strategy for the building. The Applicant should outlined how this information will be communicated to future building owners, managers and occupiers and how the building information will be stored. The Applicant should provide some additional information to describe how the end-of-life scenarios as set out in the Bill of Materials will be facilitated by the design.	This is not yet known and will be updated once the design has been progressed further. This level of detail has been sufficient for other projects at this stage.	The applicants comments are noted. It is required in the initial early stages the applicant demonstrates that the fundamentals of the EOL strategy have been considered within their CES statement ensuring the following information is provided. As per GLA guidance, The written report element of the CE statement should also set out an end-of-life strategy for the development, including: - How the EOL strategy will be communicated to future building owners, managers and occupiers, and - How the building information will be stored, for example, by using Building Information Modelling or material passporting during the building's life to facilitate disassembly and identify any key challenges. This will support the recovery of components and materials at the end of the life of the building. It is required the Applicant provides this detail in order to ensure the fundamentals for the EOL strategy have been acknowledged and developed upon for the next stages. The Applicant should provide some additional information to describe how the end-of-life scenarios as set out in the Bill of Materials will be facilitated by the design.	Per the previous comment, the Applicant should demonstrate consideration at this stage as to: - How the EOL strategy will be communicated to future building owners, managers and occupiers; - How the building information will be stored, for example, by using Building Information Modelling or material passporting during the building's life to facilitate disassembly and identify any key challenges. This will support the recovery of components and materials at the end of the life of the building. The Applicant should consider how the residual value of key materials and components will be maximized at end-of-life in line with the Circular Economy and Waste Hierarchies and how the end-of-life scenarios will be facilitated by the design.	Please see Sections 5.80 - 5.87 of the main Circular Economy Statement.	The additional information is welcomed. The Applicant should further consider **how** the residual value of key materials and components will be maximized at end-of-life in line with the Circular Economy and Waste Hierarchies and how the end-of-life scenarios will be facilitated by the design.	The end of life scenarios are outlined in the CES Template and discussed in the main Circular Economy Statement. As the design progresses into technical design, more information can be provided on maximising the value at the end of life as specific materials are specified. The Applicant is committed to developing a Site Waste Management Plan and will collaborate with the suppliers to ensure that a material end of life plan is determined, and that this information is stored and is accessible for the end occupier of the development. This will include information on how materials such as brick can be re-used as opposed to recycled or how connections can be dismantled to allow for the full reuse of various building elements	The additional information is welcomed. Nothing further is required.				
11	**Supporting Documentation**	The Applicant has provided the following supporting information as an appendix to the written report: • Operational waste strategy	It is strongly encouraged that the Applicant provide the following additional supporting information at this stage as a minimum: • Site Waste / Resource Management Plan • Cut and fill calculations and/or Excavated - Materials Options Assessment • Circular Economy workshop/ meeting notes • Reused or recycled content calculations • Scenario modelling demonstrating adaptability (for non-domestic areas)	Cut and fill calculations were provided in the CE report, section 5.22 - 5.25. An example SWMP has now been provided.	The additional information is welcomed. The SWMP doesn't appear to be appended or the CES report. Please can the applicant provide this. As per previous comments it is strongly encouraged the applicant provides the additional supporting information as a minimum: • Site Waste / Resource Management Plan • Circular Economy workshop/ meeting notes • Reused or recycled content calculations • Scenario modelling demonstrating adaptability (for non-domestic areas)	As per previous comments it is strongly encouraged the applicant provides the additional supporting information at this stage as a minimum: • Site Waste / Resource Management Plan • Circular Economy workshop/ meeting notes • Reused or recycled content calculations • Scenario modelling demonstrating adaptability (for non-domestic areas)	Please see updated report for the SWMP. Please see Appendix D for recycled content calculations.	The additional information is welcomed. The Applicant is strongly encouraged to incorporate the GLA construction phase waste recycling targets within the Site Waste Management Plan to support implementation noting that these are set **by weight.** Please refer to the comment in Row 46 with respect to the reused and recycled content calculations. As per previous comments it is strongly encouraged the applicant provides the additional supporting information at this stage as a minimum: • Circular Economy workshop/ meeting notes • Scenario modelling demonstrating adaptability (for non-domestic areas)	Meeting minutes have been provided in Appendix E. The commercial space has been designed to be flexible and will be able to [redacted] over the lifespan of the development. It also comprises less than 1% of the schemes GIA.	The additional information is welcomed. The Applicant should confirm understanding that the GLA construction phase waste recycling targets are set **by weight / mass**. It is noted that the Site Waste Management Plan refers to commitments by volume.	It is understood that the targets are by weight/mass. The current SWMP breaks this down by volume. It will be ensured that the waste arisings will be recorded by weight and 95% of the weight of these materials will be diverted from landfill. At the next stage, the SWMP will be updated to reflect this.	The additional information is welcomed. Nothing further is required.		

Date of GLA Response	19/01/2024
Date of Applicant's Response	Please fill in.

[redacted]
Principal Planner
Development Management
Merton Civic Centre,
London Road,
Morden,
SM4 5DX,

8 December 2023

Dear [redacted]

FORMER MITCHAM GASWORKS SITE, WESTERN ROAD, MITCHAM, CR4 3FL
Planning Application Reference 22/P3620

On behalf of St William Homes LLP (St William), we are pleased to enclose additional and updated information in connection with planning application 22/P3620 for the following:

"Erection of new buildings to provide residential accommodation (Class C3) and flexible commercial/community space (Class E and/or Class F2), with associated access, parking and landscaping arrangements, including the demolition of the existing telecommunications mast and re-provision of new telecommunications mast."

In addition to this covering letter, we hereby submit the following as part of this application:

- Planning Statement Addendum, prepared by WSP;
- CIL Form 1;
- Amended application drawings, prepared by Rolfe Judd (see list at **Appendix 1**);
- Design and Access Statement Addendum, prepared by Rolfe Judd;
- Energy Statement, prepared by Hodkinson;
- Sustainability Statement, Hodkinson;
- Circular Economy Statement and template spreadsheet, prepared by Hodkinson;
- Whole Life Cycle Carbon Emissions Assessment, prepared by Hodkinson;
- Whole Life Cycle Carbon Emissions template spreadsheet, prepared by Hodkinson;
- Overheating Assessment, prepared by Hodkinson;
- Transport Assessment Addendum, prepared by Iceni Projects;
- Framework Delivery and Servicing Plan, prepared by Iceni Projects;
- Operational Waste Management Strategy, prepared by Iceni Projects;
- Car Parking Management Plan, prepared by Iceni Projects;
- Flood Risk Assessment and Sustainable Drainage Strategy prepared by JNP;
- Daylight and Sunlight and Overshadowing Assessment Addendum, prepared by EB7;
- Ecological Assessment, prepared by Ecology Solutions;
- Habitat Retention Feasibility Statement, prepared by St William, Ecology Solutions and WSP;
- Fire Statement, prepared by Introba;
- Fire Strategy prepared by Introba;
- Lighting Strategy, prepared by Tetra Tech;
- Statement of Community Involvement Addendum, prepared by Iceni Projects;
- Wind Microclimate Assessment, prepared by RWDI;

WSP House
70 Chancery Lane
London
WC2A 1AF
Tel: +44 20 7314 5000
Fax: +44 20 7314 5111
wsp.com

- Construction Environmental Management and Logistics Report, prepared by St William

For the avoidance of doubt, the full list of submitted plans, corresponding to the original submission is contained at **Appendix 1**. **Appendix 2** sets out the status of the submitted documents against the original submission list.

We look forward to continuing the discussions with officers on this application. If you have any queries on what has been submitted or require any further information, please do not hesitate to contact me.

Yours sincerely

SR/HD

APPENDIX 1 – LIST OF EXISTING AND PROPOSED DRAWINGS

Drawing Name	Drawing Number submitted December 2022 (current drawing highlighted blue)	Drawing number of amended drawings submitted December 2023 (current drawing highlighted blue)
Existing Drawings		
Existing Site Location Plan	T10100 P01	*Not superseded*
Existing Site Plan	T10101 P01	*Not superseded*
Existing Site Plan – Site Levels	T10102 P01	*Not superseded*
General Arrangement, Existing Section, Site Sections 1-1 & 4-4	T10301 P01	*Not superseded*
General Arrangement, Existing Section, Site Sections 11-11 & 12-12	T10302 P01	*Not superseded*
Existing Demolitions	T18100 P01	*Not superseded*
General Arrangement Drawing – Site Wide		
Proposed Site Location Plan	T90100 P01	T90100 P05
Proposed Site Plan	T90101 P01	T90101 P05
Proposed Site Plan – Site Levels	T90102 P01	T90102 P05
Proposed Illustrated Roof Plan	T90103 P01	T90103 P05
General Arrangement Proposed Section, Site Sections 1-1 & 4-4	T90301 P01	T90301 P03
General Arrangement Proposed Section, Site Sections 11-11 & 12-12	T90302 P01	T90302 P03
General Arrangement Proposed Ground Floor Plan	T20100 P01	T20100 P05
General Arrangement Proposed First Floor Plan	T20101 P01	T20101 P04
General Arrangement Proposed Second Floor Plan	T20102 P01	T20102 P03
General Arrangement Proposed Third Floor Plan	T20103 P01	T20103 P03
General Arrangement Proposed Fourth Floor Plan	T20104 P01	T20104 P03
General Arrangement Proposed Fifth Floor Plan	T20105 P01	T20105 P04
General Arrangement Proposed Sixth Floor Plan	T20106 P01	T20106 P04
General Arrangement Proposed Seventh Floor Plan	T20107 P01	T20107 P04
General Arrangement Proposed Eight Floor	T20108 P01	T20108 P04
General Arrangement Proposed Roof Plan	T20109 P01	T20109 P04
General Arrangement Proposed Elevation Site Elevation 1(SW) & 2(NW)	T20251 P01	T20251 P04
General Arrangement Proposed Elevation Site Elevation 3(NE) & 4(SE)	T20252 P01	T20252 P04
General Arrangement Proposed Elevation Site Elevation 5(SW) & 7(NE)	T20253 P01	T20253 P04

General Arrangement Proposed Elevation Site Elevation 6(NW) & 8(SE)	T20254 P01	T20254 P03
General Arrangement Proposed Section Sections 1-1 & 5-5	T20351 P01	T20351 P03
General Arrangement Proposed Section Sections 3-3 & 4-4	T20352 P01	T20352 P03
General Arrangement Proposed Section Sections 7-7 & 11-11	T20353 P01	T20353 P03
General Arrangement Proposed Section Sections 8-8 & 12-12	T20354 P01	T20354 P03
General Arrangement Proposed Section Sections 9-9 & 10-10	T20355 P01	T20355 P03
Building A Drawings		
Building A Proposed South West Elevation	TA20201 P01	TA20201 P03
Building A Proposed North West Elevation	TA20202 P01	TA20202 P03
Building A Proposed North East Elevation	TA20203 P01	TA20203 P03
Building A Proposed South East Elevation	TA20204 P01	TA20204 P03
Building A Proposed South West Elevation Internal Elevation	*Not submitted*	TA20205 P03
Building A Proposed North West Elevation Internal Elevation	*Not submitted*	TA20206 P03
Building A, Proposed North East Elevation, Internal Elevation	*Not submitted*	TA20207 P04
Building A, Proposed South East Elevation, Internal Elevation	*Not submitted*	TA20208 P04
Building A Proposed Ground Floor Plan	TA20100 P01	TA20100 P05
Building A Proposed First Floor Plan	TA20101 P01	TA20101 P04
Building A Proposed Second Floor Plan	TA20102 P01	TA20102 P03
Building A Proposed Third Floor Plan	TA20103 P01	TA20103 P03
Building A Proposed Fourth Floor Plan	TA20104 P01	TA20104 P03
Building A Proposed Fifth Floor Plan	TA20105 P01	TA20105 P04
Building A Proposed Sixth Floor Plan	TA20106 P01	TA20106 P04
Building A Proposed Seventh Floor Plan	TA20107 P01	TA20107 P04
Building A Proposed Eight Floor Plan	TA20108 P01	TA20108 P04
Building A Proposed Roof Plan	TA20109 P01	TA20109 P04
Building B, C & D Drawings		
Building B, C & D Proposed South West Elevation	TB20201 P01	TB20201 P03
Building B, C & D Proposed North West Elevation	TB20202 P01	TB20202 P03
Building B, C & D Proposed North East Elevation	TB20203 P01	TB20203 P03
Building B, C & D Proposed South East Elevation	TB20204 P01	TB20204 P03

Building B,C & D Proposed South West Elevation Internal Elevation	*Not submitted*	TB20205 P03
Building B,C & D Proposed North West Elevation Internal Elevation	*Not submitted*	TB20206 P03
Building B,C & D Proposed North East Elevation Internal Elevation	*Not submitted*	TB20207 P03
Building B,C & D Proposed South East Elevation Internal Elevation	*Not submitted*	TB20208 P03
Building B, C & D Proposed Ground Floor Plan	TB20100 P01	TB20100 P04
Building B, C & D Proposed First Floor Plan	TB20101 P01	TB20101 P04
Building B, C & D Proposed Second Floor Plan	TB20102 P01	TB20102 P03
Building B, C & D Proposed Third Floor Plan	TB20103 P01	TB20103 P03
Building B, C & D Proposed Fourth Floor Plan	TB20104 P01	TB20104 P03
Building B, C & D Proposed Fifth Floor Plan	TB20105 P01	TB20105 P04
Building B, C & D Proposed Sixth Floor Plan	TB20106 P01	TB20106 P04
Building B, C & D Proposed Seventh Floor Plan	TB20107 P01	TB20107 P04
Building B, C & D Proposed Eight Floor Plan	TB20108 P01	TB20108 P04
Building B, C & D Proposed Roof Plan	TB20109 P01	TB20109 P04
Building E Drawings		
Building E Proposed South West Elevation	TE20201 P01	TE20201 P03
Building E Proposed North West Elevation	TE20202 P01	TE20202 P03
Building E Proposed North East Elevation	TE20203 P01	TE20203 P03
Building E Proposed South East Elevation	TE20204 P01	TE20204 P03
Building A, Proposed North East Elevation, Internal Elevation	*Not submitted*	TE20205 P03
Building A, Proposed South East Elevation, Internal Elevation	*Not submitted*	TE20206 P03
Building E Proposed Ground Floor Plan	TE20100 P01	TE20100 P04
Building E Proposed Proposed First Floor Plan	TE20101 P01	TE20101 P04
Building E Proposed Second Floor Plan	TE20102 P01	TE20102 P03
Building E Proposed Third Floor Plan	TE20103 P01	TE20103 P03
Building E Proposed Fourth Floor Plan	TE20104 P01	TE20104 P03
Building E Proposed Fifth Floor Plan	TE20105 P01	TE20105 P04
Building E Proposed Sixth Floor Plan	TE20106 P01	TE20106 P04
Building E Proposed Seventh Floor Plan	TE20107 P01	TE20107 P04
Building E Proposed Eight Floor Plan	TE20108 P01	TE20108 P04

Building E Proposed Roof Plan	TE20109 P01	TE20109 P04
Building F Drawings		
Building F Proposed South West Elevation	TF20201 P01	TF20201 P03
Building F Proposed North West Elevation	TF20202 P01	TF20202 P03
Building F Proposed North East Elevation	TF20203 P01	TF20203 P03
Building F Proposed South East Elevation	TF20204 P01	TF20204 P03
Building F, Proposed South West Elevation, Internal Elevation	*Not submitted*	TF20205 P03
Building F, Proposed North West Elevation, Internal Elevation	*Not submitted*	TF20206 P03
Building F, Proposed North East Elevation, Internal Elevation	*Not submitted*	TF20207 P03
Building F, Proposed South East Elevation, Internal Elevation	*Not submitted*	TF20208 P03
Building F Proposed Ground Floor Plan	TF20100 P01	TF20100 P05
Building F Proposed First Floor Plan	TF20101 P01	TF20101 P04
Building F Proposed Second Floor Plan	TF20102 P01	TF20102 P03
Building F Proposed Third Floor Plan	TF20103 P01	TF20103 P03
Building F Proposed Fourth Floor Plan	TF20104 P01	TF20104 P03
Building F Proposed Fifth Floor Plan	TF20105 P01	TF20105 P04
Building F Proposed Sixth Floor Plan	TF20106 P01	TF20106 P04
Building F Proposed Seventh Floor Plan	TF20107 P01	TF20107 P04
Building F Proposed Eight Floor Plan	TF20108 P01	TF20108 P04
Building F Proposed Roof Plan	TF20109 P01	TF20109 P04
Cladding Drawings		
Building A South West Elevation Proposed Elevation Detail	TA21401 P01	TA21401 P03
Building B North West Elevation Proposed Elevation Detail	TB21401 P01	TB21401 P03
Building D South West Elevation Proposed Elevation Detail	TD21410 P01	TD21410 P03
Building E South West Elevation Proposed Elevation Detail	TE21401 P01	TE21401 P03

APPENDIX 2 – LIST OF UPDATED AND NEW ADDITIONAL DOCUMENTS

Document submitted December 2022 (current document highlighted blue)	Document submitted December 2023 (current document highlighted blue)
Planning Statement	Supplemented with Planning Statement Addendum
Health Impact Assessment	[redacted]
Social Impact Assessment	[redacted]
Economic Statement	[redacted]
Design and Access Statement	Supplemented with Design and Access Statement Addendum
Energy Statement	Updated Energy Statement
Sustainability Statement	Updated Sustainability Statement
Whole Life Carbon Assessment	Updated Whole Life Carbon Assessment
Circular Economy Statement	Updated Circular Economy Statement
Overheating Assessment	Updated Overheating Statement
Preliminary Risk Assessment	[redacted]
Air Quality Assessment	[redacted]
Heritage Statement / Impact Assessment	[redacted]
Operational Waste Management Strategy	Updated Operational Waste Management Strategy

Transport Assessment	Supplemented Transport Assessment Addendum
Travel Plan	[redacted]
Delivery and Servicing Plan	Updated Delivery and Servicing Plan
Car park Management Plan	Updated Car Parking Management Plan
Ecology Assessment	Updated Ecology Assessment
Flood Risk Assessment / Sustainable Drainage Strategy	Updated Flood Risk Assessment / Sustainable Drainage Strategy
Daylight, Sunlight and Overshadowing Assessment	Updated Daylight, Sunlight and Overshadowing Assessment
Townscape and Visual Appraisal	[redacted]
Noise Assessment	[redacted]
Fire Statement	Updated Fire Statement
Fire Strategy	Updated Fire Strategy
Arboricultural Assessment	[redacted]
Statement of Community Involvement	Supplemented Statement of Community Involvement Addendum
Wind Microclimate Assessment	Updated Wind Microclimate Assessment
Archaeology Assessment	[redacted]
N/A	Construction Environmental Management and Logistics Report
N/A	Lighting Assessment

Greater London Authority - Circular Economy Statement template

How to use this spreadsheet

This template should be used by planning applicants to fulfil the requirements of the Mayor's Circular Economy (CE) Statement policy set out in London Plan Policy SI 7 'Reducing waste and supporting the Circular Economy'. Before completing and submitting this spreadsheet to the GLA, applicants should read the CE statement guidance: https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance-and-spgs/circular-economy-statement-guidance-consultation-draft

Applicant are required to submit CE statement information to the GLA at the following three stages: pre-applicaton, outline/detailed planning submission and post-construction. Separate tabs are provided in this spreadsheet for each stage. An outline of the information required at each stage and how to submit it is provided below. Please enter information to the light yellow-coloured cells only, do not enter information in the grey cells as these will be automatically calculated. The light green-coloured cells should be completed to achieve 'pioneering' status.

1. Pre-application stage
At pre-application stage, applicants are required to complete the pre-application information tab of this template which requires applicants to confirm details about the site and to provide details of the circular economy design approaches that are informing the existing and new development (including by building layer for the latter). All tables should be completed. This should be submitted to the GLA along with all other pre-application material.

2. Outline/detailed planning submission stage
At this stage, applicants are required to complete the outline or detailed planning stage tab of this template (whichever is relevant) and submit it to the GLA along with their planning application. Applicants are required to complete all tables, including the Bill of Materials and Recycling and Waste Reporting tables. Please enter information to the light yellow-coloured cells only, do not enter information in the grey cells as these will be automatically calculated. The light green-coloured cells should be completed to achieve 'pioneering' status.

3. Post-construction stage
At the final stage of the CE statement process, applicants should complete the post-construction tab of this template and submit it to the GLA within three months of practical completion. This will require an update of the information provided at planning submission stage and for the actual figures to be reported using actual material quantities during construction. Information should be submitted to: circulareconomystatements@london.gov.uk

Queries
Any queries or feedback on this template should be submitted to:
circulareconomystatements@london.gov.uk

Requirement by application stage (see relevant section of guidance for more information)	Pre-application stage (suggested)	Outline application[1]	Full application / reserved matters[2]	Post-construction	Checklist	Information Reference (Please indicate whether this has been included in the report to accompany this template or as a separate submission)
CE targets (see section 4.2)	Encouraged	Yes	Yes	Yes (Performance reported)		Evidence in CES template spreadsheet
CE design approaches (see sections 2.3 - 2.5 and 4.3)	Yes	Yes	Yes	N/A		Evidence in CES template spreadsheet
CE design principles (see sections 2.1, 4.4 - 4.5)	Yes	No	No	No		Evidence in CES template spreadsheet
CE design principles by building layer (see sections 4.5)	No	Yes	Yes	No		Evidence in CES template spreadsheet
Pre-redevelopment audit (see section 4.6)	Encouraged	Yes	Yes	N/A		
Pre-demolition audit (see section 4.6)	Encouraged	Yes	Yes	N/A		
Bill of materials (including calculations – see section 4.7)	No	Yes (Estimated)	Yes (Estimated)	Yes (Actual)		Evidence in CES template spreadsheet
End of life strategy (see section 4.7)	No	No	Yes	Encouraged		
Operational waste management plan (see section 4.8)	No	No	Yes	Encouraged		
Recycling and waste reporting (see Section 4.9)	No	Yes (Estimated)	Yes (Estimated)	Yes (Actual)		Evidence in CES template spreadsheet
Lessons learnt and key achievements (see section 4.10)	N/A	N/A	N/A	Yes		Evidence in CES template spreadsheet

[1] Also applicable to the outline and detailed part of hybrid applications.
[2] Also applicable to the outline and detailed part of hybrid applications.

GREATER LONDON AUTHORITY

Pre-Application Stage - Circular Economy Statement

Project details	
Project name	
Planning application reference number (if applicable)	
Applicant	
London Borough	
Brief description of the project	
Author/s	
Date of assessment	
Number of Use Types	
Use Class / Type	**Floor Area by use type (m^2)**
Use Class / Type 1	*Use Class / Type 1 GIA*
Overall GIA (m^2)	0.00

Circular Economy Design Approaches

Circular Economy Design Approaches for Existing Structures / Buildings		**Applicant Response**
Is there an existing building on the site?		
Circular Economy Design Approach	**Phase / Building / Area / Layer**	**Strategic Response**
Retain and Retrofit		
Reconstruct		
Disassemble		
Demolish and Recycle		
Circular Economy Design Approaches for New Buildings, Infrastructure an		**Applicant Response**
Is the whole building designed to have a short life on its current site? (e.g. less than 10 yrs)		
Circular Economy Design Approach	**Phase / Building / Area / Layer**	**Strategic Response**
Building relocation		
Component or material reuse		
Adaptability		
Flexibility		
Replaceability		
Disassembly		
Longevity		

Circular Economy Design Principles

Design Principle		**Phase / Building / Area / Layer**	**Design Response**
Designing out waste	Module A - Product Sourcing and Construction Stage		
	Module B - In-Use Stage		
	Module C - End-of-Life Stage		
	Module D - Benefits and Loads Beyond the System Boundary		
Designing for longevity			
Designing for adaptability or flexibility			
Designing for disassembly			
Using systems, elements or materials that can be re-used and recycled			

Circular Economy Targets

Circular economy targets for existing and new development	**Policy Requirement**	**Target Aiming For (%)**	**Policy Met?**
Demolition waste materials (non-hazardous)	Minimum of 95% diverted from landfill for reuse, recycling or recovery.		
Excavation waste materials	Minimum of 95% diverted from landfill for beneficial reuse.		
Construction waste materials	Minimum of 95% diverted from landfill for reuse, recycling or recovery.		
Municipal waste	Minimum 65% recycling rate by 2030.		
Recycled content	Minimum 20% of the building material elements to be comprised of recycled or reused content.		

GREATER**LONDON**AUTHORITY

Outline Application Stage - Circular Economy Statement

Project details	
Project name	
Planning application reference number (if applicable)	
Applicant	
London Borough	
Brief description of the project	
Author	
Date of assessment	
Number of Use Types	
Use Class / Type	**Floor Area by use type (m²)**
Use Class / Type 1	*Use Class / Type 1 GIA*
Overall GIA (m²)	0.00

Circular Economy Design Approaches

Circular Economy Design Approaches for Existing Structures / Buildings	**Applicant Response**
Is the whole building on the site?	
Circular Economy Design Approach	**Phase/Building/Area/Layer**	**Strategic Response**
Refurbish		
Repurpose		
Disassemble		
Disassemble and Reuse		
Demolish / Deconstruct and Recycle		
Circular Economy Design Approaches for New Buildings, Infrastructure and Lar	**Applicant Response**
Is the whole building designed to have a short life on its current site? (e.g. less than 10 years)	
Circular Economy Design Approach	**Phase/Building/Area/Layer**	**Strategic Response**
Building relocation		
Component or material reuse		
Adaptability		
Flexibility		
Replaceability		
Disassembly		
Longevity		

Circular Economy Design Principles by Building Layer

The Circular Economy Commitments table should consider where the Applicant seeks to go beyond standard practice. If there are multiple phases / buildings / areas with different measures / strategies, please specify these separately within the table below.

	Building Layer								Summary	Challenges	Actions & Counter-Actions, Who and When	Plan to Prove and Quantify
	Site	Substructure	Superstructure	Shell/Skin	Services	Space	Stuff	Construction Stuff				
L: Is it likely the layer (or components within it) will need to be moved or otherwise modified within 5-15 years, e.g. due to [redacted] use patterns or user requirements?	N/A							N/A				
S: Is it likely the layer (or components within it) will need to be [redacted] upgraded or replaced within 5-15 years, e.g. for improved performance, aesthetics	N/A							N/A				
The preferred strategy is	-							-				
Design Principles	**All developments should apply the 8 circular economy principles, including designing for DISASSEMBLY and ADAPTABILITY, MATERIAL REUSE ON-SITE and/or RECYCLING should be maximised.**											
Designing out waste – Module A – Product Sourcing and Construction Stage												
Designing out waste – Module B - In-Use Stage												
Designing out waste – Module C - End-of-Life Stage												
Designing out waste – Module D - Benefits and Loads Beyond the System Boundary												
Designing for longevity												
Designing for adaptability or flexibility												
Designing for disassembly												
Using systems, elements or materials that can be re-used and recycled												

Bill of Materials

Please click the + symbol to the left hand side of the Bill of Materials table to view or hide the input rows for each Building Element Category. The rows for substructure and frame have been unhidden to highlight this.

BUILDING ELEMENT CATEGORY - LEVEL 1 (based on the RICS New Rules of Measurement (NRM) classification system level 2 sub-elements https://www.rics.org/globalassets/rics-website/media/products/data-products/bcis-constructionbcis-elemental-standard-form-cost-analysis-4th-nrm-edition-2012.pdf)		PRODUCT AND CONSTRUCTION STAGE (MODULE A)								USE STAGE (MODULE B)					END OF LIFE STAGE (MODULE C)					BENEFITS BEYOND THE SYSTEM BOUNDARY (MODULE D)			
	Building Element Category	Material Type	Material quantity (Module A) (kg)	Material intensity (Module A) (kg/m² GIA)	Performance Indicator (LPD Appendix 1)	Construction Waste Factor (Module A)	Construction Waste (Module A) (kg)	Recycled Content by mass (kg)	Recycled Content by value (%)	Expected Lifespan (years)	Number of Replacements (over assumed 60-year period)	Repair and Replacement quantities of materials (Module B) (kg)	Construction Waste Factor (Module B)	Construction Waste (Module B) (kg)	Design for Disassembly	Assumed End of Life Scenario (Description)	% Reusing	% Recycling	% Landfill	Estimated reusable materials (kg)	Estimated reusable materials intensity (kg/m² GIA)	Estimated recyclable materials (kg)	Estimated recyclable materials intensity (kg/m² GIA)
0.1	**Demolition: Toxic/Hazardous/Contaminated Material Treatment**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
0.2	**Major Demolition Works**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
0.3	**Temporary Support to Adjacent Structures**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
0.4	**Specialist Ground Works**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
1	**Substructure**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
1	**Substructure**		0	-			0				0			0			0%	0%	100%	0	0	0	0
2.1	**Superstructure: Frame**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
2.1	**Superstructure: Frame**		0	-			0				0			0			0%	0%	100%	0	0	0	0
2.2	**Superstructure: Upper Floors**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
2.3	**Superstructure: Roof**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
2.4	**Superstructure: Stairs and Ramps**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
2.5	**Superstructure: External Walls**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
2.6	**Superstructure: Windows and External Doors**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
2.7	**Superstructure: Internal Walls and Partitions**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
2.8	**Superstructure: Internal Doors**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
3	**Finishes**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
4	**Fittings, furnishings & equipment (FFE)**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
5	**Services (MEP)**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
6	**Prefabricated Buildings and Building Units**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
7	**Work to Existing Building**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
8	**External works**	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
	Overall		0	0			0					0		0			0%	0%	100%	0	0	0	0

Recycling and Waste Reporting table

The light green-coloured cells should be completed to achieve 'pioneering' status.

			TOTAL ESTIMATES OF WASTE			WASTE MANAGEMENT ROUTES						SUMMARY			
						REUSE		RECYCLE		OTHER DISPOSAL					
	Type of Waste	Source of Information	Overall Waste (tonnes)	Overall Waste (tonnes/m² GIA)	Performance Indicator (LPD Appendix 1)	Reuse Onsite (%)	Reuse Offsite (%)	Recycle Onsite(%)	Recycle Offsite (%)	To Landfill (%)	To Other Management (%)	Total Reuse (%)	Total Recycle (%)	Total Reuse and Recycle (%)	Total Waste Reported (%)
	PRODUCT AND CONSTRUCTION STAGE (MODULE A)														
1	**Demolition Waste**			0.000								0%	0%	**0%**	0%
2	**Excavation Waste**			0.000								0%	0%	**0%**	0%
3	**Construction Waste**			0.000								0%	0%	**0%**	0%
	USE STAGE (MODULE B)														
3	**Demolition / Strip-out Waste**		0	0.000	-							0%	0%	**0%**	0%
4	**Construction Waste**		0	0.000	-							0%	0%	**0%**	0%
			Overall Waste (tonnes/annum)	Overall Waste (tonnes/annum GIA)	Performance Indicator (LPD Appendix 1)	Reuse Onsite (%)	Reuse Offsite (%)	Recycle Offsite(%)	Recycle Offsite (%)	To Landfill (%)	To Other Management (%)	Total Reuse (%)	Total Recycle (%)	Total Reuse and Recycle (%)	Total Waste Reported (%)
5	**Municipal Waste**			0.000								0%	0%	**0%**	0%
6	**Industrial Waste (if applicable)**			0.000	-							0%	0%	**0%**	0%
	MODULE A - MODULE C														
			Overall Materials (tonnes)	Overall Materials (Modulves A-C) (tonnes /m²)	-	Reuse Onsite (%)	Reuse Offsite (%)	Recycle Offsite(%)	Recycle Offsite (%)	To Landfill (%)	To Other Management (%)	Total Reuse (%)	Total Recycle (%)	Total Reuse and Recycle (%)	Total Waste Reported (%)
7	**Total Materials**		0	0.000	-							0%	0%	**0%**	0%

Circular Economy Targets

Circular economy targets for existing and new development	**Policy Requirement**	**Target Aiming For (%)**	**Policy Met?**	**Explanation (How will performance against this metric be secured through design, implementation and monitoring?)**
Demolition waste materials (non-hazardous)	Minimum of 95% diverted from landfill for reuse, recycling or recovery.			
Excavation waste materials	Minimum of 95% diverted from landfill for beneficial reuse.			
Construction waste materials	Minimum of 95% diverted from landfill for reuse, recycling or recovery.			
Municipal waste	Minimum 65% recycling rate by 2030.			
Recycled content	Minimum 20% of the building material elements to be comprised of recycled or reused content.			
Additional requirements	**Policy Requirement**	**Please acknowledge acceptance for a planning condition**		**Please set out an indicative timescale and responsible party for the provision of this information**
Reserved Matters Reporting	A condition will be attached to an approval of a referable outline planning permission, securing the submission of a CE Statement as a reserved matter. Applications for reserved matters will be required to review and address the information provided at outline stage and update any default values used as far as possible.			

GREATER**LONDON**AUTHORITY

Detailed Application Stage - Circular Economy Statement

Project details	
Project name	Mitcham Gas Works
Planning application reference number (if applicable)	
Applicant	St.William Homes LLP
London Borough	London Borough of Merton
Brief description of the project	Erection of new buildings to provide residential accommodation (Class C3) and commercial accommodation (Class E) together with the creation of new pedestrian access, parking and landscaping arrangements, including the demolition of the existing telecommunications mast and re-provision of new telecommunications mast.
Author of assessment	[redacted] - Hodkinson Consultancy
Number of assessment	1.0
Use Class / Type	**Floor Area by use type (m2)**
C3	70229
Overall GIA (m2)	70229

Circular Economy Design Approaches

Circular Economy Design Approaches for Existing Structures / Buildings	**Applicant Response**
Is there an existing building on the site?	Yes
Are there any building materials or elements available on site that can be used?	No
The preferred strategy is:	**NEW BUILDING**

Circular Economy Design Approach	**Phase/Building/Area/Layer**	**Strategic Response**
Refurbish	Substructure/superstructure	Various above ground structures have existed on site previously, including gasholders, industrial units, and office buildings. The site is largely cleared (ahead of St William owning the site) and the 30mgasholder frame was recently demolished, although the lower structure and foundations remain. The 60m telecoms mast remains and will require relocation on site.
Repurpose	Substructure/superstructure	Lower structure and foundations remain. The 60m telecoms mast remains and will require relocation on site.
Disassemble / Deconstruct and Reuse	Substructure/superstructure	The telecoms tower will be demolished once the equipment has been reinstalled on top of a building in the first phase of the development. The tower will be removed in pieces using a mobile crane to take the load while an operative cuts the mast into sections using temporary scaffolding, cleavage and lifting plan. Once demolished, the final phase of the development will commence.
Demolish / Deconstruct and Recycle		

Circular Economy Design Approaches for New Buildings, Infrastructure and Lar	**Applicant Response**
Is the whole building designed to have a short life on its current site? (e.g. less than 10 yrs)	No
Is it foreseeable that the building will need a [redacted] use/function within its design life?	No
All developments should apply the 8 Circular Economy principles, including:	**Designing for DISASSEMBLY and ADAPTABILITY, MATERIAL REUSE ON-SITE and/or RECYCLING should be maximised**

Circular Economy Design Approach	**Phase/Building/Area/Layer**	**Strategic Response**
Building relocation	Substructure/superstructure	The 60m telecoms mast remains and will require relocation on site.
Component or material reuse	Substructure/superstructure/Shell and skin	In accordance with GLA guidance, the Bill of Materials will include kg/m2 for the proposed new development and will commit to exceeding the benchmark of 25% (by value) reused or recycled content. The building envelope will predominantly comprise of brickwork, and therefore at the end-of-life stage, all brick material will be repurposed. The Bill of Materials will be reviewed and updated in detail to maximise the re-use of material on site via treatment and distribution
Adaptability	Spaces/stuff	The detailed design of the site layout should include opportunities to make it adaptable, this could include the use of moveable planters and limiting the use of adhesives and fixings.
Flexibility	Space	The flexible commercial/community space offer further opportunities for the site and the future tenants.
Replaceability	Stuff	Durable, hard-wearing, and low-maintenance façade materials are also proposed. Glazing replacement is expected to be required on an occasional basis and will generally be from the inside of the building via the lifts, with access equipment or abseiling as described opposite used to position the operative and assist from the outside and applying any necessary seals between the window and masonry.
Disassembly	Spaces/stuff/Shell and skin	The project has been largely designed with projecting bolt-on balconies, allowing for these to be manufactured off site and for these to be disassembled at the end of their life.The proposed development will be designed with disassembly in mind as well as maintenance and replacement of elements. Where feasible, assets will seek to be designed to allow for easy assembly and reconfiguration, for alternative future uses.
Longevity	Substructure/superstructure/Shell and skin	The development will include a reinforced concrete build up, improving the structural integrity and durability of the buildings. This reduces the long-term maintenance requirements, promoting longevity within design.

Circular Economy Design Principles by Building Layer

The Circular Economy Commitments table should consider where the Applicant seeks to go beyond standard practice. If there are multiple phases / buildings / areas with different measures / strategies, please specify these separately within the table below.

	Building Layer								**Summary**	**Challenges**	**Actions & Counter-Actions, Who and When**	**Plan to Prove and Quantify**
	Site	**Substructure**	**Superstructure**	**Shell/Skin**	**Services**	**Space**	**Stuff**	**Construction Stuff**				
Is it likely the layer (or components within it) will need to be removed or otherwise modified within 5-10 years, e.g. due to [redacted] new patterns or user requirements?	N/A	No	No	No	No	No	No	N/A				
Is it likely the layer (or components within it) will need to be [redacted] upgraded or replaced within 5-10 years, e.g. for improved performance, aesthetics...	N/A	No	No	No	No	Yes	Yes	N/A				
The preferred strategy is:	-	**Design for ADAPTABILITY**	**Design for ADAPTABILITY**	**Design for ADAPTABILITY**	**Design for ADAPTABILITY**	**Design for REPLACEABILITY**	**Design for REPLACEABILITY**	-				
Design Principles					**All developments should apply the 8 circular economy principles, including designing for DISASSEMBLY and ADAPTABILITY, MATERIAL REUSE ON-SITE and/or RECYCLING should be maximised.**							
Designing out waste	A Whole Life Cycle Carbon Emissions assessment is being undertaken (Hodkinson Consultancy) to ensure a lean, low embodied carbon design is adopted, where feasible. St William Homes LLP will operate within the wider Berkeley Group Sustainable Procurement Strategy. They have established sustainable timber and concrete to be the responsible selection and sourcing of products and services, considering environmental, economic and ethical aspects over their whole lifecycle. They have an extensive materials supply chain which is critical to meeting production needs. To support resilience and continuity of supply for typical materials, Berkeley Group are launching a new materials strategy and are forming strategic agreements with suppliers. They will ensure materials meet quality, safety and sustainability requirements and are procured ethically.	St William LLP have undertaken studies on recycled content in concrete. The aim is to increase cement replacement to as high as technically feasible- no less than 50% for substructure. For steel, a 25-30% recycled content is targeted. The cut and fill sequence has been reviewed in detail to maximise the re-use of material on site via treatment and distribution. It is assumed that the gasholder void will be left unfilled so that some of these arisings's can be used to fill this structure.	St William LLP have undertaken studies on recycled content in concrete. The aim is to increase cement replacement to as high as technically feasible- up to 60-70% for the superstructure. For steel, a 25-30% recycled content is targeted. At least 20% of materials will include reused or recycled content by value, where feasible.	The plasterboard contractor (once appointed) is to be set a target of 5% waste within their contract conditions, based on final fixed quantities of plasterboard. Off cuts from plasterboard works will be stored on pallets for use in more detailed work near completions. Also, it is proposed that smaller off cuts are to be used for filling in ceiling voids and any plasterboard in temporary partitions are to be re-used as inner skin of permanent walls, wherever practicable.	All new dwellings will target a minimum internal water efficiency standard of 105 litres/person/day in accordance with the London Plan Policy SI5 and the optional tighter Building Regulations Approved Document G requirement (110 litres/person/day).	The main building materials will be responsibly and legally sourced from manufacturers with environmental management systems and/or responsible sourcing credentials, such as BES 6001. All timber specified will be legally harvested and traded timber that is certified by a scheme that is endorsed by the Central Point of Expertise for Timber Procurement such as Forest Stewardship Council (FSC) accreditation - which ensures that the harvest of timber and non-timber products maintains the forest's ecology and its long-term viability.	Off cuts from plasterboard works will be stored on pallets for use in more detailed work near completions. Also, it is proposed that smaller off cuts are to be used for filling in ceiling voids and any plasterboard in temporary partitions are to be re-used as inner skin of permanent walls, wherever practicable A ground contamination assessment has found that the site is of high risk of contaments and appropriate remediation works will need to take place. Remediation of contaminated land removes threats to health and safety, and enables land, to be improved that would otherwise be left. Site welfare facilities to be modular so they can be installed and disassembled and removed to another site once works are complete.	Waste will be designed out through the construction phase	Ensuring the contractor completes the SWMP and strives to achieve the targets set Sustainable procurement plan is not implemented during construction Higher recycled content targets may limit supply chain. Site welfare facilities are not sufficiently sized Use of contaminated land means that additional waste is generated to ensure all of this material is removed.	Regular reviews of the SWMP to be done by site manager. Ensure the procurement plan land requirements (e.g. for cleaterboard) are included in all tender documents. Preconstruction supply chain engagement to take place. Implementation of these actions will be checked in the post construction statement The site welfare will evolve along the duration of the project so it is the site managers responsibility to ensure that an appropriate number of welfare modules are in situ during the right stages. It is expected that the scale of facilities will be less at the start and end of the project.	Regular reviews of the SWMP Material efficiency review exercise at next stage of design to ensure ongoing consideration is made within the design. Bill of materials to be provided to confirm final recycled content of materials. Regular review of the project programme to ensure the site welfare facilities are suitable.
	Module A - Product Sourcing and Construction Stage											
	The waste store will be clearly labelled to ensure accurate segregation of refuse, mixed recycling, and food waste Residents will be required to transport their own waste from their apartments directly to the main waste storage area using the passenger lifts, where they will segregate their waste into the appropriately labelled bins The onsite Facilities Management team will be responsible for monitoring, managing, and cleaning the communal commercial waste storage area New residents and property occupants will be encouraged to reduce and prevent waste through good practice measures such as providing information packs to residents about how the waste segregation and recycling scheme operates				The development will achieve a total reduction in regulated CO2 emissions of 58% through be lean, be clean and be green on-site measures and will provide homes that are energy efficient and incorporate Low and Zero Carbon technologies.				Waste will be designed out during the in sure phase through	The main challenge will be ensuring appropriate actions take place at post-construction stage to ensure the handover and commissioning takes place effectively, and also to ensure the building performs as per the predicted from the energy model. Space requirements for the waste storage facility	Ensure that the specification is incorporated into all tender specifications Handover and commissioning must be planned prior to completion to ensure relevant parties are informed of their responsibilities. Post-occupancy evaluation could take place to understand any key divergence of the real building performance compared to the predicted energy model. Steps should be taken to correct any issues as soon as practicable. Design team to incorporate requirements into base build e.g. waste store	Design stage and as built energy BRUKL Relevant commissioning information to be provided
	Module B - In-Use Stage											
	The development is committed to meet the mayor's 65% targets for municipal waste recycling by 2030 (17% for preparing for re-use and recycling) and ensure that biodegradable or recyclable waste is sent to landfill by 2025, once the proposed development is operational.			The building envelope will predominantly comprise of brickwork, and therefore at the end-of-life stage, all brick material will be repurposed.				Waste will be designed out during the end of life by specifi	Ensure an appropriate mortar is used to allow for the disassembly of bricks end of life	Once construction is completed, information should be stor	Product specification confirmation
	Module C - End-of-Life Stage Module D - Benefits and Loads Beyond the System Boundary											
Designing for longevity			The development will include a reinforced concrete build up, improving the structural integrity and durability of the buildings. This reduces the long-term maintenance requirements, promoting longevity within design.		An Operations and Maintenance (O&M) program will be produced, and records kept across the building life cycle to increase longevity.			The RC build up of the proposed development ensures that	Ensuring robustness and longevity don't compromise other CE principles	Review of specifications at each stage and regular workshops with the design team	Regular review as the design progresses to ensure the building continues to be designed for longevity
Designing for adaptability or flexibility			The project has been largely designed with projecting bolt on balconies, allowing for these to be manufactured off site. Some layouts incorporate fully recessed balconies, which are also being constructed as recessed built on balconies.	The flexible commercial/community space offer further opportunities for the site and the future tenants. This space will therefore be designed with flexible use in mind, for example, the lifts will cater for the requirements and demands of time. Glazing replacement is expected to be required on an occasional basis and will generally be from the inside of the building via the lifts, with access equipment or abseiling as described opposite used to position the operative and assist from the outside and applying any necessary seals between the window and masonry.			Infrastructure and hard landscaping are typically less adaptable than other elements of the built environment. At present a resilient hard landscaping design has been designed which enables servicing and maintainability. The detailed design of the site layout should include the opportunities to make it adaptable, this could include the use of moveable planters and limiting the use of adhesives and fixings.	Bolt on balconies and a flexible commercial ensure the built	Ensuring the design is not over engineered. Balance to be struck between a resilient landscaping strategy and ensuring we don't increase the embodied carbon	Detailed workshops to plan the most appropriate adaptability studies within the contraints of the project. Assess embodied carbon of landscaping	Regular design reviews and workshops
Designing for disassembly	All assets will seek to be designed to allow for easy assembly and reconfiguration where feasible, for alternative future uses, for example, the design of interior systems for disassembly. Materials will have the option to be recycled, reused, non-chemical and reversible fixings to allow for future reuse.		A brief end-of-life strategy will be developed at detailed design to demonstrate how the building materials, components and products can be disassembled and reused at the end of their useful life. One fundamental principle of this is creating accessible connections and choosing the appropriate joinery to ease dismantlement and avoid the use of heavy equipment, or too many tools. This is to be achieved by implementing dry fixings, such as screwed, or nailed connections, as opposed to non-removable, chemical ones such as binders, sealers, glues or welding, which would make the material difficult to separate and recycle.		Permanent fixing of products, such as by glue and cement mortar, will be avoided where feasible, to enable end of life deconstruction and salvage of building elements. Fixings will be easily accessible, where possible, for disassembly. Pre-fabrication is intended for bolt on balconies, mike installations, facade elements and kitchen units.		The proposed development will be designed for disassembl	Potentially compromising the initial design concept having to account for different design considerations and principles which might have previously been overseen. Ensuring that the design for for the prefab elements is fixed as once designed and constructed (off site) it can be very difficult to make [redacted]	Design team to consider and incorporate measures within the design where feasible. Ensure the required performance spec is designed early on so that any pre-fab elements are incuded and not over designed	Review exercise at next stage of design and confirm the key design consideration made in line with aspirations.
Using systems, elements or materials that can be re-used and recycled	The proposed design is not yet fixed as it is at the planning stage, therefore ongoing reviews at each RIBA stage will continue to take place to ensure material efficiency is maximised.		The building envelope will predominantly comprise of brickwork, and therefore at the end-of-life stage, all brick material will be repurposed.					The façade system will be able to be recycled, as well as	Ensuring users are aware of these schemes to reduce waste. Also ensuring waste is monitored appropriately.	Ensure building management are aware of these requirements for the 65% waste reduction (75% recycling/reuse) target is implemented. A building user guide to ensure users are aware of their duties with regard to waste management.	Review copies of the user guide before its issued

Bill of Materials

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BUILDING ELEMENT CATEGORY - LEVEL 1 (based on the RICS New Rules of Measurement (NRM) 1 classification system level 2 sub-elements https://www.rics.org/globalassets/rics-website/media/products/data-products/bcis-construction/bcis-elemental-standard-form-cost-analysis-4th-nrm-edition-2012.pdf)		PRODUCT AND CONSTRUCTION STAGE (MODULE A)						USE STAGE (MODULE B)				END OF LIFE STAGE (MODULE C)				BENEFITS BEYOND THE SYSTEM BOUNDARY (MODULE D)			
Building Element Category	Material Type	Material quantity (Module A) (kg)	Material intensity (Module A) (kg/m² GIA)	Performance Indicator (LPG Appendix 1)	Construction Waste Factor (Module A)	Construction Waste (Module A) (kg)	Recycled Content by mass (kg)	Recycled Content by value (%)	Expected Lifespan (years)	Number of Replacements (over assumed 60-year period)	Repair and Replacement quantities of materials (Module B) (kg)	Construction Waste Factor (Module B)	Construction Waste (Module B) (kg)	Design for Disassembly	Assumed End of Life Scenario (Description)	% Reusing	% Recycling	% Landfill	Estimated reusable materials (kg)	Estimated reusable materials intensity (kg/m² GIA)	Estimated recyclable materials (kg)	Estimated recyclable materials intensity (kg/m² GIA)
0.1	**Demolition: Toxic/Hazardous/Contaminated Material Treatment**	-	**0**	0	-	-	-	-	-	-	-	-	-	-	-	0%	0%	100%	0	0	0	0
0.2	**Major Demolition Works**	-	**0**	0	-	-	-	-	-	-	-	-	-	-	-	0%	0%	100%	0	0	0	0
0.3	**Temporary Support to Adjacent Structures**	-	**0**	0	-	-	-	-	-	-	-	-	-	-	-	0%	0%	100%	0	0	0	0
0.4	**Specialist Ground Works**	-	**0**	0	-	-	-	-	-	-	-	-	-	-	-	0%	0%	100%	0	0	0	0
1	**Substructure**		**30,479,197**	**514**	#REF!	-	1,177,709	-	-	-	-	-	-			7%	93%	0%	2,059,540	34	28,559,154	478
1	**Substructure**	Ready-mix concrete, low-strength, generic, C12/15 (17000/2200 PSI), 0% recycled binders in cement (220 kg/m3) / 0.09 lbs/lb	12,418,120	208	-	0	496,725	-	-	60	1	0	0	-	-	0%	0%	100%	0	0	12,418,120	208
1	**Substructure**	Aggregate (crushed gravel), generic, dry bulk density, 1600 kg/m3	1,868,160	31	-	0	0	1,868,160	100%	60	1	0	0	No	backfilling (for inert material	100%	0%	0%	1,868,160	31	0	0
1	**Substructure**	Waterproofing membrane, single component, cold applied, from PU, 1.5 mm, 1.98 kg/m2, Sikalastic-625 (BASF)	15,205	0	-	0	1,829	-	-	60	1	0	0	Yes	ic-based material incinera	0%	0%	100%	0	0	0	0
1	**Substructure**	Reinforcement steel (rebar), generic, 97% recycled content, A615	674,289	11	-	0	32,366	654,060	78%	60	1	0	0	Yes	Steel recycling	0%	100%	0%	0	0	674,289	11
1	**Substructure**	Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3) / 0.72 lbs/lb	10,361,000	173	-	0	414,440	1,036,100	15%	60	1	0	0	No	ete (for sub-base layers),	0%	100%	0%	0	0	10,361,000	173
1	**Substructure**	Insulation, EPS slab form, for roofs and walls, 0.031 W/(mK), 18 kg/m3 (EPS-propane), 100 mm, 0.031 W/(mK), 18 kg/m3 (EPS-propane)	13,603	0	-	0	544	2,449	11%	60	1	0	0	Yes	ic-based material incinera	0%	0%	100%	0	0	0	0
1	**Substructure**	EPS Insulation, 0.032 W/(mK), 600 x 1200 mm, 0.031 W/(mK), 18 kg/m3 (EPS-propane)	27,340	0	-	0	1,094	4,921	11%	60	1	0	0	Yes	ic-based material incinera	0%	0%	100%	0	0	0	0
1	**Substructure**	Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3) / 0.72 lbs/lb	4,921,200	82	-	0	196,848	492,120	26%	60	1	0	0	No	ete (for sub-base layers),	0%	100%	0%	0	0	4,921,200	82
1	**Substructure**	Plastic vapour control layer, 0.2 mm (Tommen Gram)	1,264	0	-	0	126	-	-	30	2	0	0	Yes	ic-based material incinera	0%	0%	100%	0	0	0	0
1	**Substructure**	Self levelling mortar, for floors, walls and overhead appl., 9-20 mm, 1404 kg/m3, Pavroc (PCI Augsburg)	191,380	3	-	0	24,879	-	-	60	1	0	0	No	ment/mortar use in a bac	100%	0%	0%	191,380	3	0	0
1	**Substructure**	Reinforcement steel (rebar), generic, 97% recycled cont	184,545	3	-	0	5,808	178,055	67%	60	1	0	0	Yes	Steel recycling	0%	100%	0%	0	0	184,545	3
2.1	**Superstructure: Frame**		**19,362,601**	**307**	#REF!	-	745,713	-	-	-	-	-	-			-	0%	100%	0%	0	0	19,362,601	307
2.1	**Superstructure: Frame**	Reinforcement steel (rebar), generic, 97% recycled content, A615	328,569	5	-	0	15,771	318,711	62%	60	1	0	0	Yes	Steel recycling	0%	100%	0%	0	0	328,569	5
2.1	**Superstructure: Frame**	Reinforcement steel (rebar), generic, 97% recycled content, A615	1,072,566	18	-	0	51,483	1,040,389	67%	60	1	0	0	Yes	Steel recycling	0%	100%	0%	0	0	1,072,566	18
2.1	**Superstructure: Frame**	Ready-mix concrete, normal-strength, generic, C40/50 (5800/7300 PSI), 10% (typical) recycled binders in cement (400 kg/m3) / 24.87 lbs/lb	4,031,088	67	-	0	161,244	403,109	34%	60	1	0	0	No	ete (for sub-base layers),	0%	100%	0%	0	0	4,031,088	67
2.1	**Superstructure: Frame**	Ready-mix concrete, normal-strength, generic, C40/50 (5800/7300 PSI), 10% (typical) recycled binders in cement (400 kg/m3) / 24.87 lbs/lb	12,930,379	216	-	0	517,215	1,293,038	10%	60	1	0	0	No	ete (for sub-base layers),	0%	100%	0%	0	0	12,930,379	216
2.2	**Superstructure: Upper Floors**		**23,592,769**	**400**	#REF!	-	989,267	-	-	-	-	-	-			1	0%	99%	1%	0	0	23,649,999	396
2.2	**Superstructure: Upper Floors**	Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3) / 0.72 lbs/lb	19,712,448	330	-	0	788,498	1,971,245	7%	60	1	0	0	No	ete (for sub-base layers),	0%	100%	0%	0	0	19,712,448	330
2.2	**Superstructure: Upper Floors**	Steel, sections, UC/UB, hot rolled rolling, H, 260 cm-H, 120 cm-D, 140 cm, 561 kg/unit, Steel grade: S235/S275/S355 (CSK Stalmarkt AS)	342,771	6	-	0	34,277	-	-	15	4	0	0	Yes	ic-based material incinera	0%	0%	100%	0	0	0	0
2.2	**Superstructure: Upper Floors**	Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3) / 0.72 lbs/lb	2,811,360	47	-	0	112,454	281,136	6%	60	1	0	0	No	ete (for sub-base layers),	0%	100%	0%	0	0	2,811,360	47
2.2	**Superstructure: Upper Floors**	Reinforcement steel (rebar), generic, 97% recycled content, A615	985,622	16	-	0	47,310	956,054	37%	60	1	0	0	Yes	Steel recycling	0%	100%	0%	0	0	985,622	16
2.2	**Superstructure: Upper Floors**	Reinforcement steel (rebar), generic, 97% recycled content, A615	140,568	2	-	0	6,747	136,351	37%	60	1	0	0	Yes	Steel recycling	0%	100%	0%	0	0	140,568	2
2.3	**Superstructure: Roof**		**5,168,157**	**87**	#REF!	-	#REF!	-	-	-	-	-	-			-	-	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
2.3	**Superstructure: Roof**	PU thermal insulation boards with multi-layer aluminium fac	1,817	0	-	0	1,090	-	-	60	1	0	0	Yes	ic-based material incinera	0%	0%	100%	0	0	0	0
2.3	**Superstructure: Roof**	Roof drainage, rainwater gutter, half-round, polymer aluminium facing, L = 0.023 W/(mK), 21 kg/m3	27,208	0	-	0	12	5,452	9%	60	1	0	0	Yes	ic-based material incinera	0%	0%	100%	0	0	0	0
2.3	**Superstructure: Roof**	Filter fabric, NZ	290	1	-	0	6,500	-	-	30	2	0	0	No	ete (for sub-base layers),	0%	100%	0%	0	0	0	0
2.3	**Superstructure: Roof**	Bituminous roofing membrane roofing, 2-layer, fully torched (SIKA)	64,998	3	-	0	19,345	-	-	60	1	0	0	No	ete (for sub-base layers),	0%	100%	0%	0	0	193,446	3
2.3	**Superstructure: Roof**	Ready-mix concrete, normal-strength, generic, C20/25 (2900/3600 PSI), 0% recycled binders in cement (240 kg/m3) / 14.98 lbs/lb	193,446	4	-	0	9,145	-	-	60	1	0	0	No	e-wall (2 %), concrete to	0%	100%	0%	0	0	228,618	4
2.3	**Superstructure: Roof**	Concrete block, medium density, with expanded clay aggregate, generic, 600 kg/m3 (40.6 lbs/ft3), fill kg/block (39.7 lbs/block), 0.540-340.185 mm (Hollow core slab)	228,618	39	-	0	91,016	-	-	60	1	0	0	Yes	Steel recycling	0%	100%	0%	0	0	2,297,904	38
2.3	**Superstructure: Roof**	Hollow core concrete slabs, 840 MM, 320x200 mm, 8	2,297,904	#REF!	-	0	#REF!	-	-	60	1	0	0	No	e-wall (2 %), concrete to	0%	100%	0%	#REF!	#REF!	#REF!	#REF!
2.3	**Superstructure: Roof**	Hollow core concrete slab, 360.37 kg/m2 (DW Systembe	2,112,494	35	-	0	84,500	-	-	60	1	0	0	No	e-wall (2 %), concrete to	0%	100%	0%	0	0	2,112,494	35
2.3	**Superstructure: Roof**	Damp insulation PA, 0.18 kg/m2	1,757	0	-	0	35	-	-	30	2	0	0	Yes	ic-based material incinera	0%	0%	100%	0	0	0	0
2.3	**Superstructure: Roof**	Insulation, EPS solid form, for roofs and walls, λ = 0.040	23,257	0	-	0	931	23,257	8%	60	1	0	0	Yes	ic-based material incinera	0%	0%	100%	0	0	0	0
2.3	**Superstructure: Roof**	Extensive green roof system, 40mm, 23.24 kg/m2, Urbain	232,410	4	-	0	8,577	-	-	60	1	0	0	Yes	ic-based material incinera	0%	0%	100%	0	0	0	0
2.4	**Superstructure: Stairs and Ramps**		**1,126,669**	**19**	-	-	47,292	-	-	-	-	-	-			-	0%	100%	0%	5,595	0	1,121,090	19

		Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3)	277,226	5	-	0	11,089	27,723	6%	60	1	0	-	0	No	te (for sub-base layers),	0%	100%	0%	0	0	277,226	5
2.4	**Superstructure: Stairs and Ramps**	Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3)	799,020	13	-	0	31,961	79,902	2%	60	1	0	-	0	No	te (for sub-base layers),	0%	100%	0%	0	0	799,020	13
		Stainless steel handrail, Ram 40mm, Sonnex per default (MDEQD)	5,595	0	-	0	1,399			60	1	0	-	0	Yes	Reuse as material	100%	0%	0%	5,595	0	0	0
		Steel balcony, steel balcony with steel railings, W: 380 cm H: 100 cm D: 140 cm, 561 kg/unit, Steel grade: S235/S275/S355 (CSK Stålindustri AS)	11,551	0	-	0	1,155			60	1	0	-	0	Yes	Steel recycling	0%	100%	0%	0	0	11,551	0
		Reinforcement, steel (rebar), generic, 97% recycled content, 40%	33,293	1	-	0	1,598	32,294	88%	60	1	0	-	0	Yes	Steel recycling	0%	100%	0%	0	0	33,293	1
2.5	**Superstructure: External Walls**		**12,588,647**	**210**	#REF!	-	791,362	-	-	-	-	-	-	-	-	-	-	12%	80%	8%	1,566,690	26	10,035,035	168
		Masonry mortar/facing wall mortar/mortar with special properties, 1500 kg/m3, EPD coverage: >1500 kg/m3 (RMI)	645,922	11	-	0	83,970	0	0%	60	1	0	-	0	No	ment/mortar use in a bac	100%	0%	0%	645,922	11	0	0
		Masonry mortar/facing wall mortar/mortar with special properties, 1500 kg/m3, EPD coverage: >1500 kg/m3 (RMI)	920,968	15	-	0	119,726	0	0%	60	1	0	-	0	No	ment/mortar use in a bac	100%	0%	0%	920,968	15	0	0
		Red brick, average production, UK, 215 mm x 102.5 mm x 65 mm, 2.4 kg/unit, 1700 kg/m3 (Brick Development Association (BDA) Ltd (2019))	4,733,804	79	-	0	236,690	0	0%	60	1	0	-	0	No	egate (for sub-base layer	0%	100%	0%	0	0	4,733,804	79
2.5	**Superstructure: External Walls**	Lightweight concrete block, with expanded clay aggregate, generic, 650 kg/m3 (40.6 lbs/ft3), 1ft x 8in block (39.7 lbs/block), 0.540-340.188 mm (0.0784[.0304.007 in)	4,903,428	82	-	0	245,171	0	0%	60	1	0	-	0	No	te (for sub-base layers),	0%	100%	0%	0	0	4,903,428	82
		Rock wool insulation panels, unfaced, generic, L = 0.034 W/(m·K), 1 m x 0.6 m x 100 mm, 6.6 kg, 110 kg/m3 (6.86 lbs/ft3) (applicable for densities: 100-150 kg/m3 (6.24-9.36 lbs/ft3)), Lambda=0.037 W/(m·K)	834,525	14	-	0	33,381	166,905	23%	60	1	0	-	0	Yes	ndfilling (for inert materia	0%	0%	100%	0	0	0	0
		Gypsum plaster board, regular, generic, 6.5-25 mm (0.25-0.98 in), 10.725 kg/m2 (2.20 lbs/ft2) (for 12.5 mm/0.49 in), 858 kg/m3 (53.6 lbs/ft3)	397,803	7	-	0	47,736	159,121	35%	60	1	0	-	0	Yes	Gypsum recycling	0%	100%	0%	0	0	397,803	7
		Gypsum plaster, 1500 kg/m3 (Bundesverband der Gipsindustrie)	122,397	2	-	0	14,688	48,959	16%	30	2	0	-	0	Yes	ndfilling (for inert materia	0%	0%	100%	0	0	0	0
2.6	**Superstructure: Windows and External Doors**		**883,240**	**15**	#REF!	-	0	-	-	-	-	-	-	-	-	-	-	100%	0%	0%	883,240	15	0	0
		Mixed PVC/aluminium frame windows and patio doors, double glazed, 1.23 m x 1.48 m, 27.011 kg/m2, AM-X (Hybrids (ATLANTIS))	420,507	7	-	0	0	0	0%	40	1	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	420,507	7
2.6	**Superstructure: Windows and External Doors**	Multifunctional steel door, product group 1, 1000mm x 2000mm, 1 mm, 0.63 kg/m2 (0.13 lb/ft2), H 9 Mt, H 9 KT, R9 St, D 45 QD, D 65 (Hörmann)	42,326	1	-	0	0	41,056	57%	30	2	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	42,326	1
		Sliding door, per unit, 780 x 2250 mm, 1.755 m2, 272.08 kg/unit, Sliding Door 30 (HÖRE)	344,181	6	-	0	0	0	0%	40	1	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	344,181	6
		Internal wood door	76,226	1	-	0	0	21	3%	40	1	0	-	0	Yes	Reuse as material	0%	100%	0%	0	0	76,226	1
2.7	**Superstructure: Internal Walls and Partitions**		**2,154,494**	**36**	#REF!	-	238,851	-	-	-	-	-	-	-	-	-	-	0%	92%	8%	0	0	1,972,318	33
		Water-borne interior paints, 1.36 kg/L, average coverage 8-10 m2/L, Bona, Elona, Kolibri Sand, Pannelkotsmaal, Renovatiemaal, Tapetbehangmaal, Telmagro, Tela, Trimanfil, Trend (Tikkurila)	9,882	0	-	0	791	0	0%	15	4	0	-	0	Yes	ndfilling (for inert materia	0%	0%	100%	0	0	0	0
		Water-borne interior paints, 1.36 kg/L, average coverage 8-10 m2/L, Bona, Elona, Kolibri Sand, Pannelkotsmaal, Ranch, Superlateksi, Tapetbehangmaal, Telmagro, Tela, Trimanfil, Trend (Tikkurila)	16,677	0	-	0	1,334	0	0%	15	4	0	-	0	Yes	ndfilling (for inert materia	0%	0%	100%	0	0	0	0
2.7	**Superstructure: Internal Walls and Partitions**	Gypsum plaster board, regular, generic, 6.5-25 mm (0.25-0.98 in), 10.725 kg/m2 (2.20 lbs/ft2) (for 12.5 mm/0.49 in), 858 kg/m3 (53.6 lbs/ft3)	411,429	7	-	0	49,371	694,326	27%	60	1	0	-	0	Yes	Gypsum recycling	0%	100%	0%	0	0	411,429	7
		Gypsum plaster board, regular, generic, 6.5-25 mm (0.25-0.98 in), 10.725 kg/m2 (2.20 lbs/ft2) (for 12.5 mm/0.49 in), 858 kg/m3 (53.6 lbs/ft3)	694,326	12	-	0	83,319	694,326	27%	60	1	0	-	0	Yes	Gypsum recycling	0%	100%	0%	0	0	694,326	12
		Gypsum plaster board, regular, generic, 6.5-25 mm (0.25-0.98 in), 10.725 kg/m2 (2.20 lbs/ft2) (for 12.5 mm/0.49 in), 858 kg/m3 (53.6 lbs/ft3)	694,326	12	-	0	83,319	411,429	16%	60	1	0	-	0	Yes	Gypsum recycling	0%	100%	0%	0	0	694,326	12
		Glass wool insulation panels, unfaced, generic, L =	155,618	3	-	0	12,449			60	1	0	-	0	Yes	ndfilling (for inert materia	0%	0%	100%	0	0	0	0
		Structural steel profiles, generic, 60% recycled content,	172,237	3	-	0	8,267			60	1	0	-	0	Yes	Steel recycling	0%	100%	0%	0	0	172,237	3
2.8	**Superstructure: Internal Doors**		**441,606**	**7**	#REF!	-	0	-	-	-	-	-	-	-	-	-	-	100%	0%	0%	441,606	7	0	0
2.8	**Superstructure: Internal Doors**	Wooden and engineered wood interior doors, biogenic CO2 not subtracted (for CML), 17.55 kg/unit, DOMKE PAR DEFAUT (DED), min. thickness 39 mm, 41 kg/m3 (VHI)	441,606	7	-	0	0	0	0%	40	1	0	-	0	Yes	Reuse as material	100%	0%	0%	441,606	7	0	0
3	**Finishes**		**1,440,513**	**17**	-	-	122,896	-	-	-	-	-	-	-	-	-	-	2%	91%	6%	23,990	0	951,106	16
		Vinyl flooring, Be Natural Be Different Be easy Be Smart (JOCKSON CONSTANT)	27,711	0	-	0	833	0	0%	25	2	0	-	0	Yes	ebo-based material recyc	0%	100%	0%	0	0	27,711	0
		Polyurethane (PU) coating, flexible coating, 1.5 kg/L, Lesitapox (PCI Augsburg)	25,661	0	-	0	2,566	0	0%	20	3	0	-	0	Yes	ndfilling (for inert materia	0%	0%	100%	0	0	0	0
3	**Finishes**	Tile adhesive, all round, for ceramics, 1-5 mm, 1400 kg/m3, Integrated PVC (Ivalbond)	23,990	0	-	0	3,113	0	0%	60	1	0	-	0	No	ment/mortar use in a bac	100%	0%	0%	23,990	0	0	0
		Carpet tiles, 5 mm (0.2 in), 1.3 kg/m2 (0.27 lb/ft2), Grand Grand, Carpet tiles	413,568	7	-	0	41,657	0	0%	30	2	0	-	0	No	ehold in aggregate (for w	0%	100%	0%	0	0	413,568	7
		Carpet tiles, 5 mm (0.2 in), 1.3 kg/m2 (0.27 lb/ft2), Grand Grand, Carpet tiles	73,297	1	-	0	2,198	47,623	27%	20	3	0	-	0	Yes	ebo-based material recyc	0%	100%	0%	0	0	73,297	1
		Massive wooden flooring/parquet, 22-40[1] x 84-7000[1] x 0	371,593	6	-	0	67,557	0	0%	20	3	0	-	0	Yes	Recycling	0%	100%	0%	0	0	371,593	6
		Laminated skirting board, biogenic CO2 not subtracted (t	99,407	1	-	0	1,992	0	0%	20	3	0	-	0	Yes	ebo-based material recyc	0%	100%	0%	0	0	99,407	1
		Solution paint for different interior use, Pigment, Lightfas	32,757	1	-	0	1,779	0	0%	20	3	0	-	0	Yes	ndfilling (for inert materia	0%	0%	100%	0	0	0	0
4	**Fittings, furnishings & equipment (FFE)**		**479,732**	**8**	-	-	38,413	-	-	-	-	-	-	-	-	-	-	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	177,615	3
		Bathroom vanity unit, biogenic CO2 not subtracted (for CML), 17.55 kg/unit, DOMKE PAR DEFAUT (DED)	10,723	0	-	0	322	0	0%	17	3	0	-	0	Yes					#VALUE!	#VALUE!	#VALUE!	0
		Double particleboard wardrobe, 1800 x 1000 x 600 mm, 1.08 m3 storagevol, 72.5 kg/unit, DOUBLE WARDROBE (Stabo)	87,116	1	-	0	3,485	0	0%	17	3	0	-	0	Yes	recycling	0%	100%	0%	0	0	87,116	1
4	**Fittings, furnishings & equipment (FFE)**	Curtain wall, aluminium frame, aluminium frame, 21.2 kg/m2, DONNEE PAR DEFAUT (MINISTERE DE L'ENVIRONNEMENT, DE L'ENERGIE ET DE LA MER - MINISTERE DU LOGEMENT ET DE L'HABITAT DURABLE)	30,952	1	-	0	0	10,369	63%	60	1	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	30,952	1
		Polymer material consisting of acrylic resin and natural minerals for interior use (kitchen worktop, bar counter), 12 mm, 20.4 kg/m2, 1700 kg/m3, Corian® Quartz, DUPONT PERFORMANCE SPECIALTY PRODUCTS FRANCE SNC	59,548	1	-	0	5,955	0	0%	30	2	0	-	0	No	shed to aggregate (for si	0%	100%	0%	0	0	59,548	1
		Wall mounted,hanging cupboards, per m3 storage space, 1200mm x 761mm x 301mm, 0.36m3, 57.6Kg dimension (IKEA)	288,394	5	-	0	8,652	0	0%	20	3	0	-	0	Yes	ning product incineration	0%	0%	100%	0	0	0	0
5	**Services (MEP)**		**791,170**	**13**	-	-	5,699	-	-	-	-	-	-	-	-	-	-	0%	100%	0%	0	0	791,170	13
		Acrylic bathtub, 20.8 kg/unit	14,100	0	-	0	0	0	0%	60	1	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	14,100	0
		Porcelain sink with column stand, 20.8 kg/unit	25,488	0	-	0	0	0	0%	60	1	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	25,488	0
		Porcelain sink with column stand, 20.8 kg/unit	25,488	0	-	0	0	0	0%	60	1	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	25,488	0
		Escalator basic component (dependent on lifting height), 800 kg/m	6,400	0	-	0	0	0	0%	40	1	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	6,400	0
		Natural aggregate RS2 (MDEQD)		0	-	0	0	0	0%	85	2	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	0	0
		Expansion tank/vessel, V = 200L, DONNEE PAR DEFAUT (DED)	76	0	-	0	0	0	0%	35	1	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	76	0
		Gas condensing boiler, for collective heating, per kW, 187.1kg (masse totale du produit), Pcal= 102kW	7	0	-	0	7	0	0%	35	1	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	7	0
		Sprinkler system, room-area m2	72,601	1	-	0	0	0	0%	35	1	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	72,601	1
		Pipesystem, hot and cold water supply, PEX/Al/PEX, 0.576 kg/m, 576 kg/m3	57,620	1	-	0	576	0	0%	35	1	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	57,620	1
5	**Services (MEP)**	Air handling unit, with heat recovery through plate heat [redacted] 10 000 m3/h (5885.8 l/l/min), 1256 kg/unit (40.08 lbs/unit)	18,971	0	-	0	190	0	0%	25	2	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	18,971	0
		Ventilation ducting, per m linear, D: 63 mm (2.48 in)	16,113	0	-	0	161	0	0%	60	1	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	16,113	0
		LED lighting, P: > 40W, DONNEE PAR DEFAUT (DED)	22,165	0	-	0	0	0	0%	20	3	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	22,165	0
		10-place-setting dishwasher, 82 x 45 x 55 cm (32 x 18 x 22 in), 47.7 kg/unit (105.36 lb/unit)	29,184	0	-	0	0	0	0%	15	4	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	29,184	0
		Electric built-in oven, 60 x 60 x 56 cm (24 x 24 x 22 in), 29.45 kg/unit (65 lb/unit)	17,363	0	-	0	0	0	0%	15	4	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	17,363	0
		Electric socket, per unit	272	0	-	0	0	0	0%	45	1	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	272	0
		Electricity cabling, room-area m2	130,221	2	-	0	1,302	0	0%	45	1	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	130,221	2
		Solar panel photovoltaic system, 3 000 Wp (Grea Solar)	13,696	0	-	0	0	0	0%	35	1	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	13,696	0
		Air/air heat pump, ducted, 152 kg/unit, Pi: 16 kW, DOMK	92,872	2	-	0	929	0	0%	25	2	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	92,872	2
		Electricity distribution system, cabling and control, for all	203,848	3	-	0	2,038	0	0%	25	2	0	-	0	Yes	ining product recycling (i	0%	100%	0%	0	0	203,848	3
6	**Prefabricated Buildings and Building Units**		**0**	**0**	-	-	0	-	-	-	-	-	-	-	-	-	-	100%	0%	0%	0	0	0	0
7	**Work to Existing Building**		**0**	**0**	-	-	0	-	-	-	-	-	-	-	-	-	-	0%	0%	100%	0	0	0	0
8	**External works**		**8,433,276**	**149**	-	-	11	-	-	-	-	-	-	-	-	-	-	49%	51%	0%	4,133,725	73	4,499,210	79
		Wooden bench, 13.5 kg/unit, OVO Bench Collection (Benchmark)	278	0	-	0	11	0	0%	12	5	0	-	0	Yes	ning product incineration	0%	0%	100%	0	0	0	0
		Galvanized steel bicycle shelters, 76.7 kg/unit, DONNEE PAR DEFAUT (DED)	49,613	1	-	0	0	0	0%	60	1	0	-	0	Yes	Steel recycling	0%	100%	0%	0	0	49,613	1
8	**External works**	Concrete (general purpose grade), generic, dry bulk density, 1600 kg/m3	494,400	8	-	0	0	0	0%	60	1	0	-	0	Yes	shalt reuse via reprocess	100%	0%	0%	494,400	8	0	0
		Asphalt road - Cold construction method	1,243,725	21	-	0	0	1,243,725	67%	30	2	0	-	0	Yes	shalt reuse via reprocess	100%	0%	0%	1,243,725	21	0	0
		Cover, dry bulk density, 1600 kg/m3	43,000	1	-	0	0	0	0%	60	1	0	-	0	No	ndfilling (for inert materia	0%	0%	100%	0	0	2,356,600	43
		Concrete paving, 15.4 m2/m3, 95 units/m3, Andover Test	4,449,500	74	-	0	0	0	0%	60	1	0	-	0	No	e steel (2 %), concrete fr	0%	100%	0%	0	0	4,449,500	74
	Overall		**106,929,240**	**1,783**	#REF!	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#REF!	#REF!	#REF!	#REF!

Recycling and Waste Reporting table

The light green-coloured cells should be completed to achieve 'pioneering' status.

	Type of Waste	Source of Information	TOTAL ESTIMATES OF WASTE			WASTE MANAGEMENT ROUTES						SUMMARY			
						REUSE		RECYCLE		OTHER DISPOSAL					
			Overall Waste (tonnes)	Overall Waste (tonnes/m² GIA)	Performance Indicator (LPG Appendix 1)	Reuse Onsite (%)	Reuse Offsite (%)	Recycle Onsite(%)	Recycle Offsite (%)	To Landfill (%)	To Other Management (%)	Total Reuse (%)	Total Recycle (%)	Total Reuse and Recycle (%)	Total Waste Reported (%)
	PRODUCT AND CONSTRUCTION STAGE (MODULE A)														
1	**Demolition Waste**	**No demolition to take place**	0	0.000		11%	89%	0%	0%	0%	0%	0%	0%	**0%**	0%
2	**Excavation Waste**	**Section 5.2b in CE report.**	14,560	0.244	**2nd Quartile**							100%	0%	**100%**	100%
3	**Construction Waste**	Table 1 in CE report	5,988	0.098	**3rd Quartile**	10%	30%	0%	56%	0%	4%	40%	56%	**96%**	100%
	USE STAGE (MODULE B)														
3	**Demolition / Strip-out Waste**		0	0.000								0%	0%	**0%**	0%
4	**Construction Waste**		0	0.000								0%	0%	**0%**	0%
		Overall Waste (tonnes/annum)	Overall Waste (tonnes/annum /m²)	Performance Indicator (LPG Appendix 1)		Reuse Onsite (%)	Reuse Offsite (%)	Recycle Offsite(%)	Recycle Offsite (%)	To Landfill (%)	To Other Management (%)	Total Reuse (%)	Total Recycle (%)	Total Reuse and Recycle (%)	Total Waste Reported (%)
5	**Municipal Waste**	**Operational Waste Strategy (Iceni Projects)**	7518.36	0.126	**4th Quartile**	0%	0%	0%	53%	47%	0%		0%	53%	100%
6	**Industrial Waste (if applicable)**		-	-	-								0%	0%	0%
		MODULE A - MODULE C													
		Overall Materials (tonnes)	Overall Materials (Modulos A-C) (tonnes /m²)	-		Reuse Onsite (%)	Reuse Offsite (%)	Recycle Offsite(%)	Recycle Offsite (%)	To Landfill (%)	To Other Management (%)	Total Reuse (%)	Total Recycle (%)	Total Reuse and Recycle (%)	Total Waste Reported (%)
7	**Total Materials**		0	0.000	-							0%	0%	**0%**	0%

Circular Economy Targets

Circular economy targets for existing and new development	**Policy Requirement**	**Target Aiming For (%)**	**Policy Met?**	**Explanation (How will performance against this metric be secured through design, implementation and monitoring?)**
Demolition waste materials (non-hazardous)	Minimum of 95% diverted from landfill for reuse, recycling or recovery.	95%	Yes	Various above ground structures have existed on sit previously, including gasholders, industrial units, and office buildings. The site is largely cleared and the 35m (11 storey) gasholder frame was recently demolished, although the lower structure and foundations remain. The 45m (23 storey) telecoms mast remains and will require relocation on site.The Berkeley Group Waste Data Tool (WDT) will be used to monitor the volume and type of waste produced on site. Details of the waste produced on site will be analysed periodically. As part of their commitment to divert construction waste from landfill, St William Homes LLP will be required to regularly monitor and record the site's waste reduction performance.
Excavation waste materials	Minimum of 95% diverted from landfill for beneficial reuse.	95%	Yes	The Berkeley Group Waste Data Tool (WDT) will be used to monitor the volume and type of waste produced on site. Details of the waste produced on site will be analysed periodically. As part of their commitment to divert construction waste from landfill, St William Homes LLP will be required to regularly monitor and record the site's waste reduction performance. A benchmark of 95% for potential excavation waste put to beneficial use will also be set.This figure will therefore be set as a target for the site.
Construction waste materials	Minimum of 95% diverted from landfill for reuse, recycling or recovery.	95%	Yes	The Berkeley Group Waste Data Tool (WDT) will be used to monitor the volume and type of waste produced on site. Details of the waste produced on site will be analysed periodically. As part of their commitment to divert construction waste from landfill, St William Homes LLP will be required to regularly monitor and record the site's waste reduction performance. A benchmark of 95% for reuse or recycle, and diversion of waste from landfill (excluding hazardous waste).
Municipal waste	Minimum 65% recycling rate by 2030.	65%	Yes	The development is committed to meet the mayor's 65% target for municipal waste recycling by 2030 and will strive to ensure no biodegradable or recyclable waste is sent to landfill by 2026, once the proposed development is operational. Building Management (or separate contractor engaged on their behalf) would undertake regular, no less than weekly, a monitoring inspection of each of the waste storage arrangements across the site and the waste collection arrangements, with information on both waste storage areas and waste collection records to be recorded as a minimum. Currently, the Operational Waste Management Strategy outlines a strategy to achieve 53% reuse and recycling of municipal waste. Building occupants will be informed on recycling schemes within Merton and encouraged to increase recycling in order to achieve the target of 65%.
Recycled content	Minimum 20% of the building material elements to be comprised of recycled or reused content.	20%	Yes	The Applicant is committed to a target a benchmark of 20% reused or recycled content by value, , where feasible. Currently, it is anticipated that a value of 15.41% will be achieved. Materials with a higher recycled content will be explored as the design progresses and the detailed Bill of Materials will be updated accordingly.
Additional requirements	**Policy Requirement**	**Please acknowledge acceptance for a planning condition**		**Please set out an indicative timescale and responsible party for the provision of this information**
Post-Construction Report	A CE Statement is required at post-construction (i.e. upon commencement of RIBA Stage 6 and prior to the building being handed over, if applicable. Failure to provide the required report and the assessment would be received no more than three months post-construction)	It is accepted that the Post Construction Reporting will be conditioned		Quarter four - 2030.The Applicant will designate a suitably qualified individual to complete the post construction assessment as the design progresses.

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Post-Construction Stage - Circular Economy Statement

Project details	
Project name	
Planning application reference number (if applicable)	
Applicant	
London Borough	
Brief description of the project	
Author	
Date of assessment	
Number of Use Types	
Use Class / Type	**Floor Area by use type (m2)**
Use Class / Type 1	Use Class / Type 1 GIA
Overall GIA (m2)	0.00

Bill of Materials

Please click the + symbol to the left hand side of the Bill of Materials table to view or hide the input rows for each Building Element Category. The rows for substructure and frame have been unhidden to highlight this.

BUILDING ELEMENT CATEGORY – LEVEL 1 (based on the RICS New Rules of Measurement (NRM) classification system level 2 sub-elements https://www.rics.org/globalassets/rics-website/media/products/data-products/bcis-construction/bcis-elemental-standard-form-cost-analysis-4th-nrm-edition-2012.pdf)		PRODUCT AND CONSTRUCTION STAGE (MODULE A)								USE STAGE (MODULE B)					END OF LIFE STAGE (MODULE C)					BENEFITS BEYOND THE SYSTEM BOUNDARY (MODULE D)			
	Building Element Category	Material Type	Material quantity (Module A) (kg)	Material intensity (Module A) (kg/m² GIA)	Performance Indicator (Planning Stage Estimate)	Construction Waste Factor (Module A)	Construction Waste (Module A) (kg)	Recycled Content by mass (kg)	Recycled Content by value (%)	Expected Lifespan (years)	Number of Replacements (over assumed 60-year period)	Repair and Replacement quantities of materials (Module B) (kg)	Construction Waste Factor (Module B)	Construction Waste (Module B) (kg)	Design for Disassembly	Assumed End of Life Scenario (Description)	% Reusing	% Recycling	% Landfill	Estimated reusable materials (kg)	Estimated reusable materials intensity (kg/m² GIA)	Estimated recyclable materials (kg)	Estimated recyclable materials intensity (kg/m² GIA)
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
0.2	Major Demolition Works	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
0.3	Temporary Support to Adjacent Structures	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
0.4	Specialist Ground Works	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
1	Substructure	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
1	Substructure																						
2.1	Superstructure: Frame	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
2.1	Superstructure: Frame																						
2.2	Superstructure: Upper Floors	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
2.3	Superstructure: Roof	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
2.4	Superstructure: Stairs and Ramps	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
2.5	Superstructure: External Walls	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
2.6	Superstructure: Windows and External Doors	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
2.7	Superstructure: Internal Walls and Partitions	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
2.8	Superstructure: Internal Doors	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
3	Finishes	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
4	Fittings, furnishings & equipment (FFE)	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
5	Services (MEP)	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
6	Prefabricated Buildings and Building Units	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
7	Work to Existing Building	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
8	External works	-	0	0	-	-	0	-	-	-	-	0	-	0	-	-	0%	0%	100%	0	0	0	0
	Overall		0	0			0					0		0			0%	0%	100%	0	0	0	0

Recycling and Waste Reporting table

The light green coloured cells should be completed to achieve 'pioneering' status.

	Type of Waste	Source of Information	TOTAL ESTIMATES OF WASTE			WASTE MANAGEMENT ROUTES						SUMMARY			
						REUSE		RECYCLE		OTHER DISPOSAL					
			Overall Waste (tonnes)	Overall Waste (tonnes/m² GIA)	Performance Indicator (Planning Stage Estimate)	Reuse Onsite (%)	Reuse Offsite (%)	Recycle Onsite(%)	Recycle Offsite (%)	To Landfill (%)	To Other Management (%)	Total Reuse (%)	Total Recycle (%)	Total Reuse and Recycle (%)	Total Waste Reported (%)
			PRODUCT AND CONSTRUCTION STAGE (MODULE A)												
1	Demolition Waste		0.000									0%	0%	0%	0%
2	Excavation Waste		0.000									0%	0%	0%	0%
3	Construction Waste		0.000									0%	0%	0%	0%
			USE STAGE (MODULE B)												
3	Demolition / Strip-out Waste		0	0.000								0%	0%	0%	0%
4	Construction Waste		0	0.000								0%	0%	0%	0%
			Overall Waste (tonnes/annum)	Overall Waste (tonnes/annum/m²)	Performance Indicator (Planning Stage Estimate)	Reuse Onsite (%)	Reuse Offsite (%)	Recycle Offsite(%)	Recycle Offsite (%)	To Landfill (%)	To Other Management (%)	Total Reuse (%)	Total Recycle (%)	Total Reuse and Recycle (%)	Total Waste Reported (%)
5	Municipal Waste			0.000								0%	0%	0%	0%
6	Industrial Waste (if applicable)			0.000								0%	0%	0%	0%
			MODULE A - MODULE C												
			Overall Materials (tonnes)	Overall Materials (Modules A-C) (tonnes/m²)	Performance Indicator (Planning Stage Estimate)	Reuse Onsite (%)	Reuse Offsite (%)	Recycle Offsite(%)	Recycle Offsite (%)	To Landfill (%)	To Other Management (%)	Total Reuse (%)	Total Recycle (%)	Total Reuse and Recycle (%)	Total Waste Reported (%)
7	Total Materials		0	0.000								0%	0%	0%	0%

Circular Economy Targets

Circular economy targets for existing and new development	Policy Requirement	Target at Application Stage (%)	Rate Achieved (%)	Policy Met?	Actions Undertaken / Explanation (How has this been achieved? What are the reasons for any differences between targets/performance?)
Demolition waste materials (non-hazardous)	Minimum of 95% diverted from landfill for reuse, recycling or recovery.	95%			
Excavation waste materials	Minimum of 95% diverted from landfill for beneficial reuse.	95%			
Construction waste materials	Minimum of 95% diverted from landfill for reuse, recycling or recovery.	95%			
Municipal waste	Minimum 65% recycling rate by 2030.	65%			
Recycled content	Minimum 20% of the building material elements to be comprised of recycled or reused content.	20%			

Key Achievements and Gap Assessment:

Summary of key actions undertaken to achieve circular economy outcomes, including achievements and reasons for any differences between targets/performance		
Key Achievements	**Measure / Target Proposed at Application Stage (if applicable)**	**Actions Undertaken / Explanation (How has this been achieved? What are the reasons for any differences between targets/performance?)**
This list does not need to be exhaustive but should identify the actions with the biggest impacts)		

Lessons Learnt:

Lessons learnt from the process of undertaking a CE Statement that will inform future projects	
Description	**Explanation / Solution / Future Approach**
	(e.g. Design options or materials that could be used, design principles that could be applied)

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Circular Economy Statement

St William Homes LLP

Mitcham Gasworks

Final

Zeta Stebbings
BSc (Hons), MSc, CEnv, MIEMA

February 2024

DOCUMENT CONTROL RECORD
REPORT STATUS: FINAL

Version	Date	Reason for issue	Author	Checked by	Approved for Issue by Project Manager
v.1	08.12.22	Final	Z. Stebbings	Z Lowther	J. Peck
v.2	03.04.2023	Final	Z Stebbings	Z Lowther	J. Peck
v.3	08.06.2023	Final	Z Stebbings	Z Lowther	J. Peck
v.4	23.11.2023	Final – Updated Scheme	Z Stebbings	Z Croft	J. Peck
v.5	05.12.2023	Final – Updated Scheme	Z Stebbings/R Durrant	Z Croft	J. Peck
v.6	09.01.2024	Final	L Bisson	Z Stebbings	J Peck
v.7	23.02.2024	Final	L Bisson	Z Stebbings	J Peck

ABOUT HODKINSON CONSULTANCY

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We are able to advise at all stages of projects from planning applications to handover.

Our emphasis is to provide innovative and cost-effective solutions that respond to increasing demands for quality and construction efficiency.

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Executive Summary

This detailed Circular Economy Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by St William Homes LLP. This Circular Economy Statement relates to the revised proposals submitted in December 2023.

The purpose of this statement is to demonstrate that the proposed development at Mitcham Gasworks, has considered the following circular economy principles to:

> Conserve resources and source ethically.

> Design to eliminate waste (and for ease of maintenance).

> Manage waste sustainably and at the highest value.

The commitments below have been set to ensure that [redacted] are made at a strategic level in order to ensure that the core principles of Circular Economy are adopted:

> A minimum of 95% of non-hazardous construction waste is to be recycled or reused.

> Municipal waste recycling target of 65% by 2030 for residential and 75% for commercial.

> At least 20% of materials will include reused or recycled content by value, where feasible.

> 100% of timber used on site, including timber used in the construction phase, will be sourced from sustainable forestry sources (e.g., PEFC and FSC).

> The development will be designed to meet long-term resident needs, be robust, durable, and resilient to climate [redacted]

> Target of no less than 50% for substructure and up to 60-70% for the superstructure for cement replacement and for steel, a 23-30% recycled content is targeted.

> All residential units and the self-storage building will be provided with access to a refuse store, supporting the separate collection of dry recyclables (mixed plastics, metals, glass, card and paper) and food waste.

> All residential units will be provided with a user guide to promote the principles of circular economy.

Further different strategic approaches that can be adopted and how they could be incorporated have also been outlined in the report and will support a circular economy approach for the development. This report has demonstrated that the proposed development is compliant with the requirements of Policy SI7 of the London Plan.

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Appendix A Circular Economy Workshop Meeting Minutes

Appendix B Site Waste Management Plan

Appendix C Construction Waste Volumes

Appendix D Operational Waste Strategy

Appendix E Recycled Content Calculations

1. INTRODUCTION

1.1 This detailed Circular Economy Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by St William Homes LLP.

1.2 The purpose of this statement is to demonstrate that the proposed development at Mitcham Gasworks, has considered the following circular economy principles to:

> Conserve resources and source ethically.

> Design to eliminate waste (and for ease of maintenance).

> Manage waste sustainably and at the highest value.

1.3 The above has been undertaken throughout RIBA stages 2/3 and this statement will be included within the information being submitted to the London Borough of Merton.

1.4 The aim of circular economy is to retain the value of materials and resources indefinitely, with no residual waste at all. This is possible but will require a fundamental [redacted] in the way that buildings are designed, built, operated, and deconstructed.

1.5 This report should be read in conjunction with the *GLA Circular Economy Spreadsheet* which will be submitted alongside this report.

2. DEVELOPMENT OVERVIEW

Site Location

2.1 The proposed development site is approximately 2.43ha in size and sits within the Lavender Fields Ward, located in the London Borough of Merton, as shown in Figure 1 below. It is bounded by Portland Road to the northwest, open space with Hay Drive beyond to the west, Field Gate Lane to the southeast and Western Road to the northeast.

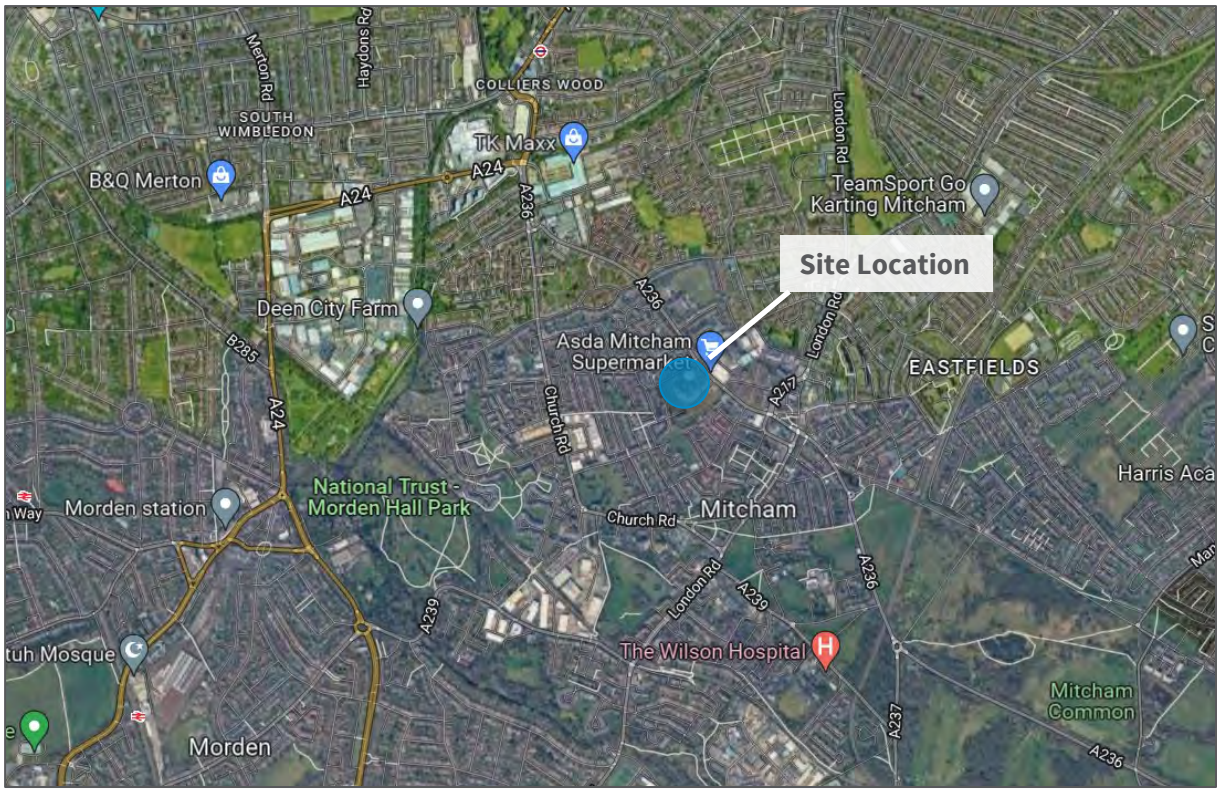

Figure 1: Site Location – Map data © 2022 Google

Proposed Development

2.2 The proposed development is described as follows:

"Erection of new buildings to provide residential accommodation (Class C3) and flexible commercial/community space (Class E and/or Class F2), with associated access, parking and landscaping arrangements, including the demolition of the existing telecommunications mast and re-provision of new telecommunications mast."

2.3 Figure 2 below illustrates the proposed site plan at ground floor level.

Figure 2: Proposed Site Plan

2.4 The total Gross Internal Floor Area (GIA) is 59,746 m^2. This consists of the following use classes:

> Residential: 53,229 m^2

> Commercial: 287 m^2

> Communal: 6,230 m^2

2.5 The principles noted within this report apply to this GIA.

Existing Buildings

2.6 The site was formerly in use as a gasworks by National Grid, with a large gasholder in the northern corner of the site. The gasholder frame was demolished in 2021 under prior approval20/P0703. The main access to the site is via Western Road, with a secondary entrance of Portland Road. The existing site contains a telecommunications mast and two pressure reduction stations (PRS). A

number of underground gas mains run across the site, with some requiring diversion to facilitate redevelopment.

2.7 The telecoms tower will be demolished once the equipment has been reinstalled on top of a building in the first phase of the development. The tower will be removed in pieces using a mobile crane to take the load while an operative cuts the mast into pieces, following a temporary works design and lifting plan. Once demolished, the final phase of the development will commence.

2.8 The site is otherwise vacant, with high walls or fences around all boundaries. No public access is possible and the site acts as a barrier to the permeability of the area. The nature of the sites boundaries also contributes to an unattractive and uninviting environment along the routes that run adjacent to the site, including Portland Road, Western Road and Field Gate Lane.

Circular Economy Workshop

2.9 A workshop was held with key members of the design team. Early collaboration between the key stakeholders ensured that Circular Economy Principles can be achieved and embedded in the design. Meeting minutes from this workshop can be found in **Appendix A**.

2.10 The following elements were discussed:

- **Pre-redevelopment and Pre-Demolition Audit:** As the site is clear it was determined that no audits were required.
- **Pre fabrication and modular:** To reduce on-site construction, pre-fabricated materials, and modular units will be specified where possible, at this stage the following was discussed:
    - Bathroom pods will be modular and prefabricated balconies are proposed.
    - Additional aspects of design will aim to be prefabricated, with further decisions to be made as the design progresses.
- **Embodied carbon:** To ensure there is no conflict with embodied carbon targets, all circular economy measures that are proposed will be discussed with Hodkinson Consultancy to ensure the carbon impact is taken into consideration.

3. POLICY AND REGULATIONS

3.1 This chapter highlights the policies and regulations which are relevant to the proposed development at Mitcham Gasworks.

London Plan (2021)

3.2 The London Plan sets out an integrated economic, environmental, transport and social framework for the development of London. The following policies are considered relevant to the proposed development and this Statement:

Policy SI7 Reducing Waste and supporting the Circular Economy.

A. Waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by:

1. Promoting a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible;

2. Encouraging waste minimisation and waste avoidance through the reuse of materials and using fewer resources in the production and distribution of products;

3. Designing developments with adequate and easily accessible storage space that supports the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass, and food).

B. Referable applications should promote circular economy outcomes and aim to be net zero-waste. A Circular Economy Statement should be submitted, to demonstrate:

1. How all materials arising from demolition and remediation works will be re-used and/or recycled.

2. How the proposal's design and construction will enable building materials, components, and products to be disassembled and re-used at the end of their useful life.

3. Opportunities for managing as much waste as possible on site.

4. Adequate and easily accessible storage space to support recycling and re-use.

5. How much waste the proposal is expected to generate, and how and where the waste will be handled.

6. How performance will be monitored and reported.

Local Policy: London Borough of Merton

Core Planning Strategy (2011)

3.3 The London Borough of Merton's Core Planning Strategy was adopted in 2011. The following policies are considered relevant to this Statement:

3.4 **Policy CS 14 Design** encourages high quality sustainable design that meets urban design and climate [redacted] objectives.

3.5 **Policy CS 17 Waste Management** requires integrated, well-designed waste storage facilities that will include recycling facilities for all new developments where appropriate.

Draft New Local Plan

3.6 The Draft New Local Plan sets out the council's statutory planning policy framework for the borough. It sets out the level of growth which needs to be planned for in Merton and identifies where that growth should be located and how it should be delivered.

3.7 The Council are in the advanced stages of their new Local Plan Review, with examination hearings having taken place in June 2022 (Stage 1) and October 2022 (Stage 2). Following the closure of the examination hearings, the Council have been working with the Planning Inspectors to consider revisions made during the course of the examination (Main Modifications). The latest version of Merton's Local Plan incorporating all of the proposed modifications was published in September 2022. Further modifications are expected to be published for consultation as the next stage of the Local Plan Review, before the Plan can be adopted.

3.8 The draft policies are material considerations but carry limited weight at this time.

3.9 **Strategic Policy CC2.1 Promoting Sustainable Design to Mitigate and Adapt to Climate** [redacted] states that development must:

> Minimise greenhouse gas emissions and support the transition to a low carbon society by maximising energy efficiency, low carbon heat and local renewable energy generation.

> Support the principles of the circular economy and promote more effective resource use.

> Recognise and adapt to Merton's [redacted] climate and ensure that development mitigates the risk of overheating and flooding and maximises comfort and wellbeing in a [redacted] climate.

> Maximise opportunities to enhance green infrastructure and tree planting to deliver multifunctional benefits such as minimising the urban heat effect, enhancing natural carbon sinks and improving air quality.

> Promote healthy and sustainable lifestyles in line with Merton's net-zero carbon target.

3.10 **Policy CC2.5 Minimising Waste and Promoting a Circular Economy** requires development to undertake a Whole Life-Cycle Carbon assessment proportionate to the scale of development and demonstrate that whole life-cycle carbon savings have been maximised. Source and prioritise materials that can easily be maintained, repaired and renewed. Specify sustainably and locally sourced, low impact and re-used or recycled materials.

Guidance Documents

3.11 Guidance was released by the Greater London Authority (GLA) *"Circular Economy Statement Guidance",* issued in March 2022. It outlines guidance on Circular Economy statements that should accompany all referable planning applications in line with the London Plan Policy SI 7.

3.12 The guidance notes that Circular Economy Statements should be submitted at the following stages:

> Full application (RIBA Stage 2/3) - Detailed Circular Economy Statement outlining how the principles will be addressed through detailed design.

> Post-completion stages (RIBA Stage 5/6) - Post-Planning Updates should outline the progress in meeting the targets and commitment can be provided during the construction process.

3.13 As the proposed development, in the London Borough of Merton is already at RIBA Stage 2/3 with a full application being submitted, a detailed Circular Economy Statement is required.

4. CIRCULAR ECONOMY PRINCIPLES

4.1 A circular economy is defined in the London Plan Policy *SI7 'Reducing Waste and Supporting the Circular Economy'* as one where materials are retained in use at their highest value for as long as possible and are then reused or recycled, leaving a minimum of residual waste.

4.2 In contrast to a linear economy (take, make, dispose), a circular economy keeps products and materials circulating through the system at their highest value for as long as possible, through re-use, recycling, refurbishment, and remanufacturing.

4.3 The end goal is to retain the value of materials and resources indefinitely, with no residual waste at all. This is possible but will require a fundamental [redacted] in the way that buildings are designed, built, operated, and deconstructed.

4.4 Applying circular economy thinking to the built environment is complex, with many overlapping issues and trade-offs to consider. However, there are some core guiding principles that promote a regenerative and restorative whole systems approach that should be applied on every project. These are as follows:

1. **Conserve resources and source ethically**

> Minimise the quantities of materials used

> Minimise the quantities of other resources used

> Specify and source materials and other resources responsibly and sustainably

2. **Design to eliminate waste (and for ease of maintenance)**

> Design for longevity, adaptability or flexibility and reusability or recoverability

> Design out construction, demolition, excavation, and municipal waste arising

3. **Manage waste sustainably and at the highest value**

> Manage demolition waste

> Manage excavation waste

> Manage construction waste

> Manage municipal waste

4.5 Adoption of these three core principles on developments typically reduce the amount of raw and new materials required. Alongside this, a reduction in vehicle movements, air pollution, noise and greenhouse gas emissions would also be beneficial. There are also benefits from cost savings through the reduction in materials required.

Method Statement

Berkeley Group 'Our Vision' (2030)

4.6 As part of the Berkeley Group, St William Homes LLP will ensure that the Proposed Development achieves the goals and targets set out in the 'Our Vision' document.

4.7 Berkeley Group's approach to sustainability is about considering the future. It is about developing the homes and places of the future without compromising the ability of the younger generations to meet their needs.

4.8 Berkeley Group consider the long-term impacts of their activities an ensure that they take action to reduce them both in terms of running the business efficiently and considerately and by developing sustainable homes and places. Berkeley has had a strong commitment to sustainability and environmental management across the business for many years, with their Sustainability and Climate [redacted] policies launched in 2007. Berkeley Group's sustainability strategy sets out the approach to maintaining a leadership position by embedding sustainability within the business and setting out key focus areas which seek to protect, enhance and inspire. To meet these ambitions, Berkeley Group have five focus areas – Climate action, Communities and sustainable living, Nature, Environmental management and Resources.

4.9 This Circular Economy Statement supports the wider business strategy 'Our Vision' and is supported by sustainability standards that set out the detail on how Berkeley Group manage sustainability and circular economy principles through their projects and in their business.

Berkeley Group sustainability standards

4.10 Specific design requirements are required on each Berkeley Group development and as such, need to be implemented. The relevant sustainability standards applicable to this statement are as follows:

4.11 Resources and Material Efficiency: All developments will reduce their impact on key resources and work collaboratively with the supply chain to procure sustainable materials by:

> Providing internal recycling facilities to all new homes.

> Ensuring that materials and products are sourced responsibly.

> Ensuring that all timber is FSC or PEFC certified and has a Chain of Custody.

5. APPROACH TO CIRCULAR ECONOMY

Strategic Design Making

5.1 The GLA decision tree within the *GLA Circular Economy Spreadsheet* has been used to determine the most appropriate design approach for the site. This has determined to be a 'new building' based on the questions within the spreadsheet.

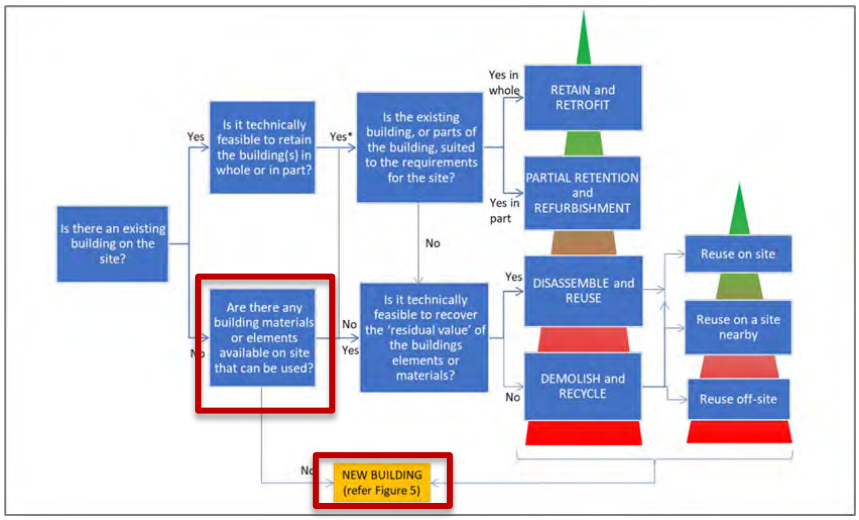

Figure 3: Decision tree for design approaches for existing structures/buildings (Circular Economy Statement guidance, GLA, March 2022)

5.2 St William Homes LLP are aiming to make [redacted] at a strategic level to ensure that the core principles of circular economy are adopted where feasible. Identifying and applying these approaches during concept design will enable them to be incorporated as part of the development brief.

5.3 Further different strategic approaches that can be adopted and how they could be incorporated are listed below.

Targets and Monitoring

5.4 Circular economy targets have been agreed with the design team and will be used to influence decisions and design as we progress through the project. These are outlined below:

> Demolition waste materials (non-hazardous) – 95%

> Excavation waste materials – 95%

> Construction waste materials – 95%

> Municipal waste – residential (by 2030) – 65%

> Municipal waste – business (by 2030) – 75%

> Recycled content – 20%

5.5 An overview on how the Applicant will meet these targets is outlined in this report and in the accompanying GLA spreadsheet.

5.6 To monitor the targets, the Applicant will ensure that waste associated with the enabling works (demolition and excavation waste) and construction will be accurately recorded via a Site Waste Management Plan. Operational waste will be measured post-construction to ensure that the targets set are achieved. Finally, the recycled content will be monitored through the development of the actual Bill of Materials.

5.7 More detailed information on the monitoring process is outlined in later section of this report.

Conserve Resources

Existing Buildings

5.8 Various above ground structures have existed on site previously, including gasholders, industrial units, and office buildings. The site was cleared (ahead of St William owning the site) and the 30m gasholder frame was recently demolished, although the lower structure and foundations remain. The 65m telecoms mast remains and will be relocated on site.

5.9 As the site was cleared prior to St William's involvement and ownership of the site, a pre-demolition audit and pre-redevelopment audit is not required and has not been undertaken by St William. Any hard standing discovered on site will be 100% reused in the proposed development.

Sustainable Procurement

5.10 St William Homes LLP will operate within the wider Berkeley Group Sustainable Procurement Strategy. They define sustainable specification and procurement to be the responsible selection and sourcing of products and services, considering environmental, social, economic and ethical aspects over their whole lifecycle. This procurement strategy aims to do the following:

- Select contractors based on their sustainability credentials and work in partnership to create a more sustainable supply chain
    - Encourage all contractors to have appropriate policies and management systems in place as standard.
    - Work in partnership with appointed contractors to ensure that the environmental and social impacts of their work are minimised and that each operative is appropriately trained.
    - Encourage contractors to sign up to the Supply Chain Sustainability School.
- Preferentially source sustainable products and materials.
    - Consider transportation distance and mode, including from the original source of extraction/manufacture.
    - Review the sustainability credentials of materials and their suppliers as part of the procurement process.
- Consider the sustainability of materials from the outset and specify sustainable products throughout the design process
    - Consider environmental impacts when specifying products and ISO 20400 Sustainable Procurement Standard where appropriate.
    - Specify products with consideration to the likely source and processing locations of materials, with a preference given to those which are produced within Organisation for Economic Co-operation and Development (OECD) countries.
    - Incorporate sustainable specification aspirations within briefs for consultants and architects.
    - Give preference to materials which have a low environmental impact, have high recycled content, and have recognised sustainability ratings.

5.11 They have an extensive materials supply chain which is critical to meeting production needs. To support resilience and continuity of supply for typical materials, Berkeley Group are launching a new materials strategy and are forming strategic agreements with suppliers. They will ensure materials meet quality, safety and sustainability requirements and are procured ethically.

5.12 They will build on this further by preferentially partnering with companies that share their commitment to climate action, maximising the use of products with lower embodied carbon, and working together on sustainability targets such as waste reduction and following the principles of the circular economy.

5.13 Materials from suppliers who participate in responsible sourcing schemes such as the BRE BES 6001:2008 Responsible Sourcing Standard will be targeted, where feasible. In addition, products with a recognised environmental product declaration (EPD) will be targeted where possible.

5.14 All timber specified will be legally harvested and traded timber and will be sourced from schemes supported by the Central Point of Expertise for Timber Procurement such as Forest Stewardship Council (FSC) accreditation – which ensures that the harvest of timber and non-timber products maintains the forest's ecology and its long-term viability.

5.15 St William LLP have undertaken studies on recycled content in concrete. The aim is to increase cement replacement to as high as technically feasible- no less than 50% for substructure and up to 60-70% for the superstructure. For steel, a 23-30% recycled content is targeted in line with current advise from British Steel.

Recycled Content of Materials

5.16 The Applicant is committed to target a benchmark of 20% reused or recycled content by value., where feasible. A brief bill of materials summary table has been provided in the *GLA Circular Economy Template*, submitted alongside this application.

Minimised Material Use

5.17 Adopting a design approach that focuses on material resource efficiency so that less material is used in the design (e.g., lean design), and / or less waste is produced in the construction process, without compromising the design concept.

5.18 The heights of the proposed buildings have been reduced following consultation with the GLA, Merton Council, the Design Panel, and the local community. Through the reduction of building heights, the overall material use has been reduced.

5.19 Off cuts from plasterboard works will be stored on pallets for use in more detailed work near completions. Also, it is proposed that smaller off cuts are to be used for filling in ceiling voids and any plasterboard in temporary partitions are to be re-used as inner skin of permanent walls, whenever practicable.

5.20 The development has taken steps to ensure other resource use will be kept to a minimum. Examples include:

- The development will achieve a total reduction in regulated CO_2 emissions of 56% through be lean, be clean and be green on-site measures and will provide homes that are energy efficient and incorporate Low and Zero Carbon technologies.

- All new dwellings will target a minimum internal water efficiency standard of 105 litres/person/day in accordance with the London Plan Policy SI5 and the optional tighter Building Regulations Approved Document G requirement (110 litres/person/day).

5.21 A ground contamination assessment has found that the site is of high risk of contaminants and appropriate remediation works will need to take place. Remediation of contaminated land removes threats to health and safety, and enables land, to be improved that would otherwise be left.

Cut and Fill

5.22 The cut and fill sequence has been reviewed in detail to maximise the re-use of material on site via treatment and distribution.

5.23 Taking the assumed existing site levels, the buildings, landscaping, and roads build up has been subtracted to provide the formation level (below pile mat). The difference between the existing and proposed formation level is then calculated and then multiplied by the area to equal the total cut and total fill volumes. Added to these are the piles, pile caps, ground beams/rafts, surface water attenuation tanks and utilities distribution trenches which will require redistribution or carting off-site.

5.24 It is assumed that the gasholder void will be left unfilled so that some of these arising's can be used to fill this structure. A first draft for the overall quantity of arising's has been put together by St William and is outlined below:

- The total formation arising's CUT = 13,486m^3

- The total formation arising's FILL = -5,895m^3 (Gasholder volume = -5,662m^3)

- The substructure and infrastructure arising's for the development = 8,109m^3

- Site won hard for re-use across site = 2,569m^3

- The volume of disposed off-site material = 12,054m^3

5.25 Locations where the landscaped areas might be artificially raised to create mounds will be investigated within the landscape design. Further options for lowering the site and graded to meet boundary levels have been explored.

Eliminating Waste

Designing for Longevity

5.26 The proposed development will seek to design with longevity in mind. Examples include protecting materials from degradation due to environmental conditions, adopting passive design strategies to provide resilience, and sizing systems to cope with future climate scenarios.

5.27 The development will include a reinforced concrete build up, improving the structural integrity and durability of the buildings. This reduces the long-term maintenance requirements, promoting longevity within design.

5.28 Appropriate durability measures will be incorporated in vulnerable parts of the internal building to minimise the frequency of replacing materials and therefore optimising material use. These measures are likely to include:

> Hard-wearing floor finishes.

> Stair treads.

> Kick plates on doors and

> Kerbs in servicing/vehicle areas.

5.29 Durable, hard-wearing, and low-maintenance façade materials are also proposed.

5.30 Various energy saving sustainable initiatives will be included in the design, such as highly insulated external fabric and walls, and low-energy lighting throughout.

Designing for Assembly, Disassembly and Recoverability

5.31 The proposed development will be designed with disassembly in mind as well as maintenance and replacement of elements. Where feasible, assets will seek to be designed to allow for easy assembly and reconfiguration, for alternative future uses.

5.32 Materials, where possible, will have the option to be taken apart through mechanical and reversable fixings to allow for future reuse. Permanent fixing of products, such as by glue and cement mortar, will be minimised where feasible, to enable end of life deconstruction and salvage of building elements.

5.33 The building envelope will predominantly comprise of brickwork, and therefore at the end-of-life stage, all brick material will be repurposed.

5.34 A brief end-of-life strategy will be developed at detailed design to demonstrate how the building materials, components and products could be disassembled and reused at the end of their useful life.

5.35 At this RIBA stage, a detailed Bill of Materials is not yet available and will instead be provided in time for the Post Construction Circular Economy Statement. In accordance with GLA guidance, the Bill of Materials will include kg/m^2 for the proposed new development and will commit to exceeding the benchmark of 25% (by value) reused or recycled content. A brief bill of materials summary table has been provided in the GLA spreadsheet.

Designing for Adaptability or Flexibility

5.36 The project has been largely designed with projecting bolt-on balconies, allowing for these to be manufactured off site. Some layouts incorporate fully recessed balconies, which are also being constructed as recessed bolt on balconies.

5.37 The flexible commercial/community space offer further opportunities for the site and the future tenants. This space will therefore be designed with flexible use in mind, ensuring that the site will cater for the requirements and demands of time.

5.38 Infrastructure and hard landscaping are typically less adaptable than other elements of the built environment. At present a resilient hard landscaping design has been designed which enables servicing and maintainability. The detailed design of the site layout should include opportunities to make it adaptable, this could include the use of moveable planters and limiting the use of adhesives and fixings.

Standardisation

5.39 The proposed development will consider designing and construction methods by applying, where feasible, standardised elements for materials and products that enable a reduction in construction waste and easier reuse in next life.

5.40 The plasterboard contractor (once appointed) is to be set a target of 5% waste within their contract conditions, based on final fixed quantities of plasterboard.

5.41 It will be a requirement that plasterboard sheet sizes will be matched to storey height, loading out to correct quantities.

Managing Waste

Site Waste Management

5.42 Prior to any Enabling works beginning on site, a Project Waste Management Plan will be drafted, a draft copy has been provided in **Appendix B.** The plan will include details on waste minimisation strategies incorporated in design and procurement stages. It will also include information on how waste will be managed during the construction phase, along with predictions for various waste streams.

5.43 The Waste Hierarchy Strategy is currently employed on all St William site, to minimise the volume of wastes produced and divert waste from landfill as far as reasonably practicable. This will also be true for the proposed demolition and remediation works. A target of 95% (volume) recycle/ reuse for demolition and construction waste will be set on this project.

5.44 The location of the waste handling site that materials will be taken to, will vary dependent upon their specific make up, of which is yet to be confirmed. Notification of the likely destination of all waste streams (incl. beyond the Materials Recycling Facility) will be provided, including confirmation that the destination landfill(s) has/have the capacity to receive waste.

5.45 Waste facility sites in Morden, Lower Morden, Mitcham, and Merton Abbey may be used amongst others as appropriate. Wherever possible, materials will be recycled and re-used either onsite, or provided for use elsewhere. Waste segregation will take place during construction as far as the site allows logistically to give the highest possible recycling rates.

5.46 A strategy will be put in place to minimise the space taken by storage of new materials. Frequently used items will be placed in easy to access areas. This will increase efficiency and minimise wastage due to damage. Prolonged storage of materials on site will be avoided, where possible, and implementation of ‘just in time’ deliveries will be encouraged.

5.47 Waste segregation will take place during construction as far as the site allows logistically to give the highest possible recycling rates.

5.48 The energy and water consumptions of the project will be monitored, either through sub-metering or reading utility bills, to allow comparison against best practice benchmarks and improvements made.

5.49 Iceni projects (November 2023) have calculated the estimated construction waste for the project, this is shown in Table 1 and is also included in **Appendix C** for reference. These above figures have been used in the accompanying Circular Economy Spreadsheet.

Table 1: Construction waste volume (Iceni, December 2023)

Total GIA (sqm)	BRE project type	Tonnes per 100m² (GFA)	Estimated construction waste (tonnes)
38,048	Residential	15.3	5,821.3
287	Commercial	15.7	45.1
Total	**-**	**-**	**5,866.4**

Construction Waste Monitoring

5.50 The Berkeley Group Waste Data Tool (WDT) will be used to monitor the volume and type of waste produced on site. Details of the waste produced on site will be analysed periodically. Charts demonstrating the percentage of waste recycled and the type of waste produced will be displayed on the project office and site welfare area to raise staff awareness.

5.51 The tool can be used to demonstrate 'Duty of Care' in ensuring waste produced on site is being disposed of in accordance with legislation. It is proposed that periodic due diligence checks will also be carried out at the end disposal facilities accepting waste from the project.

5.52 As part of their commitment to divert construction waste from landfill, St William Homes LLP will be required to regularly monitor and record the site's waste reduction performance. They aim to reuse or recycle 95% of waste from landfill (excluding hazardous waste) by 2025 from their sites. A benchmark of 95% potential excavation waste, excluding hazardous waste will be put to beneficial reuse.

Operational Waste

5.53 Waste reduction during the operational phase is also being considered for opportunities in implementing waste mitigation measures for the potential impacts arising during the operation of the development to ensure that such measures are consistent with both national and local waste policies and targets.

5.54 The Waste Hierarchy strategy in accordance with the London Plan will be used to ensure that waste is reduced or reused prior to being put out for recycling or refuse collection. The waste hierarchy, as shown in Figure 4 below, establishes waste management options according to what is best for the environment. It places great importance on preventing waste in the first place. When waste is created it prioritises preparing if for re-use, then recycling, recovery and lastly disposal (e.g., landfill).

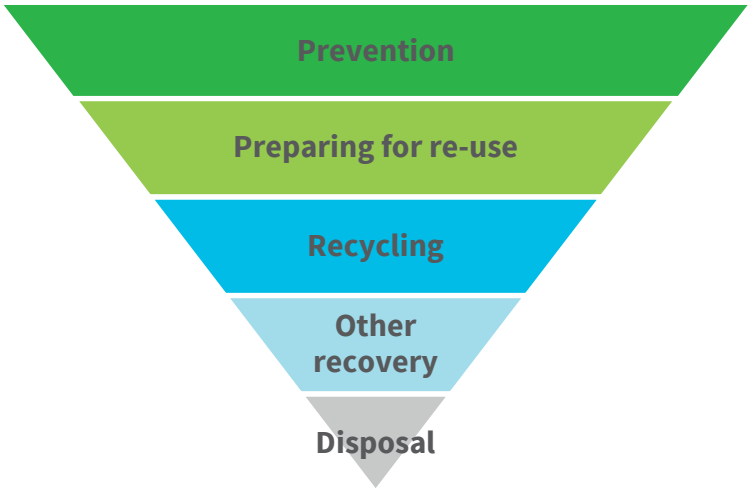

Figure 4: Waste Hierarchy

Waste Arising & Storage - Dwellings

5.55 To facilitate easy sorting of waste streams for residents, each dwelling will be fitted with a three-compartment waste bin, with each compartment corresponding to the relevant waste stream to be collected by the Council. This will maximise the potential for residents to correctly sort waste within their home. Guidance for waste stream sorting and collection will be provided in the home user manual.

5.56 The anticipated arisings from the residential component of the Proposed Development are shown in Table 2 below.

Table 2: Domestic waste arisings

Block	Homes	Weekly arisings (litres)		
		Refuse	Dry recyclables	Compostable
A	135	16,200	16,200	1,080
B	77	9,240	9,240	616
C	28	3,360	3,360	224
D	46	5,520	5,520	368
E	139	16,680	16,680	1,112
F	154	18,480	18,480	1,232
Total	**579**	**69,480**	**69,480**	**4,632**

5.57 When internal bins are full, residents will transfer their waste to a dedicated storage area, located within the curtilage of their block on the ground floor. In accordance with the Council's waste collection requirements, waste storage bins are defined by the waste stream as follows:

> **Refuse:** 1,100 litre Eurobins.

> **Dry recyclables:** 1,100 litre Eurobins.

> **Compostable (without garden waste):** 240 litre wheeled bins.

5.58 Table 3 below shows the number of Eurobins required in each location, and the associated minimum area required for the bin store, excluding circulation space. The below assumes both residual and recycling waste streams will be collected by the Council on a weekly basis.

Table 3: Domestic waste storage requirements

Location	Storing refuse for blocks	No. of dwellings	No. of 1,100 l residual bin	No. of 1,100 l recycling bin	No. of 240 l bin	Min. area of store (m^2)
Core A2	A1, A2	72	8	8	3	27.26
Core A4	A3, A4	63	7	7	3	24.12
Block B1, and B2 (Central Waste Store)	B1, B2, C, D	151	16	16	6	54.51
Block C	C	28	3	3	1	10.13
Block D	D	46	5	5	2	17.13
Block E	E1, E2, E3	139	14	14	5	47.51
Core F1	F1	62	7	7	3	24.12
Block F2 and F3	F2, F3	92	10	10	4	34.25

5.59 Locations of the bin storage areas, where all bins will be stored, is shown in Figure 5 below.

Figure 5: Refuse Store Locations (Rolfe Judd, December 2023)

5.60 As demonstrated in the table above, a total of eight waste storage locations will be provided, with weekly waste arisings to be collected by the Council's waste operatives from six of these locations on a weekly basis, accounting for a weekly transfer of waste from Blocks C and D to the waste storage area provided within Block B by the estate management team.

5.61 The turning circle for the refuse vehicle is quoted as 18.0 metres and in-roads are able to accommodate this.

Waste Arising & Storage – Commercial

5.62 The anticipated arisings from the commercial component of the Proposed Development are shown in Table 4.

Table 4: Commercial waste storage requirements

Location	Use	GIA (m^2)	Type	Weekly waste volume (litres)	Proportion of waste stream	
					Residual	Recycling
Block A3	Flexible Commercial / Community Use	196	Industrial	981	50%	50%
Block A3	Flexible Commercial / Community Use	91	Industrial	456	50%	50%

5.63 The bins will be located within the curtilage of the flexible commercial and community spaces and will be accessible to waste collection operatives. 1,100 litre Eurobins and 240 litre wheeled bins will be provided for the storage of waste arising from both the flexible community and flexible commercial spaces. The resulting non-domestic waste storage requirements are provided in the table overleaf. For the purposes of this waste management strategy, a weekly collection rate has been assumed.

Table 5: Non-domestic waste storage requirements

Location	Use Type	Number of 1,100 litre Eurobins		Number of 240 litre wheeled bins		Min. area of store (m^2)
		Residual	Recycling	Residual	Recycling	
Block A3	Flexible Commercial / Community Space	1	1	-	-	3.97
Block A3	Flexible Commercial / Community Space	-	-	1	1	1.83

Operational Waste

5.64 The reduction of operational waste from developments is essential to reducing their environmental impacts. The expected volume of waste alongside necessary provisions and management for ensuring that waste is both minimised and properly processed should be outlined and then managed.

5.65 The implementation of an Operational Waste Strategy is best industry practice and imperative for good environmental performance in buildings. Iceni Projects Limited (December 2023) have produced a strategy as shown in **Appendix D**, this demonstrates that the Proposed Development has been designed to be compliant with all relevant waste management policy and will manage and dispose of waste in a sustainable manner.

5.66 New residents and property occupants will be encouraged to reduce and prevent waste through good practice measures such as providing information packs to residents about how the waste segregation and recycling scheme operates in the proposed development.

5.67 The information packs will also include details on waste prevention schemes in and around the borough such as:

- **Too Good to Go** – Aims to reduce food waste, it is a mobile application that connects restaurants and stores that have unsold, surplus food with customers who can then buy whatever food the outlet considers surplus to requirements, at a much lower price than normal.
- **Local Charities –** Sustainable Merton is a local environmental charity in Merton that inspires, engages and influences local people and partner organisations to be the solution to environmental issues.
- **Reuse and Recycling Centres** - Reuse and recycling centres allow occupants and residents to dispose of a wide range of reusable and recyclable items for free.
    - Garth Road Household Reuse and Recycling is located in the London Borough of Merton and is open to the public. If visiting by car, bookings should be made online at least five days in advance.
- **Freecycle Network; and Freegle** – These are networks that aims to increase reuse and reduce landfill by offering a free online based service where people can give away and ask for things that would otherwise be thrown away.
- **Sustainable Merton** – Merton's local environmental charity aiming to inspire and educate the community to take action against climate [redacted] and waste reduction and prevention in particular.

5.68 For more detailed information on the Operational Waste Management Strategy, the report submitted by Iceni Projects Limited should be referred to (December 2023).

Operational Waste Monitoring

5.69 The development is committed to meet the mayor's 65% target for municipal waste recycling by 2030 (75% for commercial spaces) and will strive to ensure no biodegradable or recyclable waste is sent to landfill by 2026, once the proposed development is operational.

5.70 Building Management (or a separate contractor engaged on their behalf) would undertake a regular monitoring inspection of each of the waste storage arrangements across the site and the waste collection arrangements, with information on both waste storage areas and waste collection records to be recorded as a minimum.

5.71 Unless otherwise advised through separate discussions, building management would notify London Borough of Merton of any [redacted] to the site waste management arrangements proposed to be brought forward as a result of the review programme and have these agreed (in writing if required) prior to implementation and operation at the site.

5.72 As the detailed design for the proposed development continues, the potential to include for smart logistics, such as the provision of 'smart' bins and the consideration of weather and traffic data to inform the routes of refuse collection services may be considered. Further to this, refuse management during the operation of the development will account for the waste management needs of the existing surrounding properties and any development coming forward to ensure the most efficient management of waste within the area may be achieved. This may also include the delivery of community-led waste minimisation schemes, such as the establishment of a community-led reuse centre. It is noted, however, that considering it is intended that waste be managed through the use of the London Borough of Merton's refuse services, the incorporation of any smart logistics, or the delivery of community-led waste minimisation schemes will be done so in consideration of the services available.

Recycling Waste Reporting Form

5.73 The recycling and waste metrics reporting will be provided by the main contractor, once appointed. This will be agreed with the project manager and a site waste management plan, which will contain improved estimates for figures shown in Table 6 below.

Table 6: Recycling and Waste Reporting – Construction and Municipal Waste

	Excavation Waste	Demolition Waste	Construction Waste	Municipal Waste
Total Estimate (t/m² GIA)	0.246	0	0.136	0.127
% Reused on or off site	>95%	0	>95%	>65% (Resi) >75% (Non-resi)
% Recycled or composted, on or off site				
% to landfill	<5%	0	<4%	

		Excavation Waste	Demolition Waste	Construction Waste	Municipal Waste
% not reused or recycled	**% to other management (e.g. incineration)**	0%	0	<1%	Max 35% and no recyclable or compostable waste

Plans for Implementation

5.74 Considerations for circular economy implementation will be required through active engagement with key stakeholders at each stage, of which include (but not limited to):

> Principal Contractor and Sub-contractors (when appointed).

> Project Architect.

> Structural Engineers.

> Transport Consultants.

> Client.

5.75 A brief plan of implementation (short, medium, and long term) and action list will be compiled throughout the early stages of design. Key actions to include:

> Structural team to ensure ongoing review of cement replacement content and recycled content of steel.

> Continue to update and refine cut and fill calculations.

5.76 Such requirements, along with the projects strategic approach to implementing circular economy principles, will be included in tendering specifications to contractors, ensuring responsibilities in line with these aspirations are embedded from the earliest opportunity.

5.77 Waste is a key performance indicator included in project performance dashboards for St William Homes LLP for the ongoing monitoring of construction waste by site managers. This will help to ensure that construction waste targets (95% diversion from landfill) are met.

5.78 St William Homes LLP will continue to work with the design team to identify and provide solutions on key challenges with material use with the aim to reduce this even further.

5.79 It is proposed the following actions are taken to implement and monitor the actions included in this Circular Economy Statement:

> Ensure a site specific SWMP is produced (post planning) and populated with the targets and actual waste data.

> Provide an updated bill of materials.

> Update recycling and waste forms.

> Provide reused or recycled content calculations and building weight calculations.

> Undertake a lesson learned workshop at the end of the project.

End of Life Strategy

5.80 The One Click LCA Building Circularity tool was used to estimate the opportunity for returning the material at the end of life of the building. The results presented here are based on the inputs used for the whole life carbon assessment (Hodkinson Consultancy, December 2024). Whilst impossible to predict construction processes and minimum recycling rates in 60 years time, One Click has made assumptions based on current practices and industry benchmarks to enable a reasonable estimation to be undertaken.

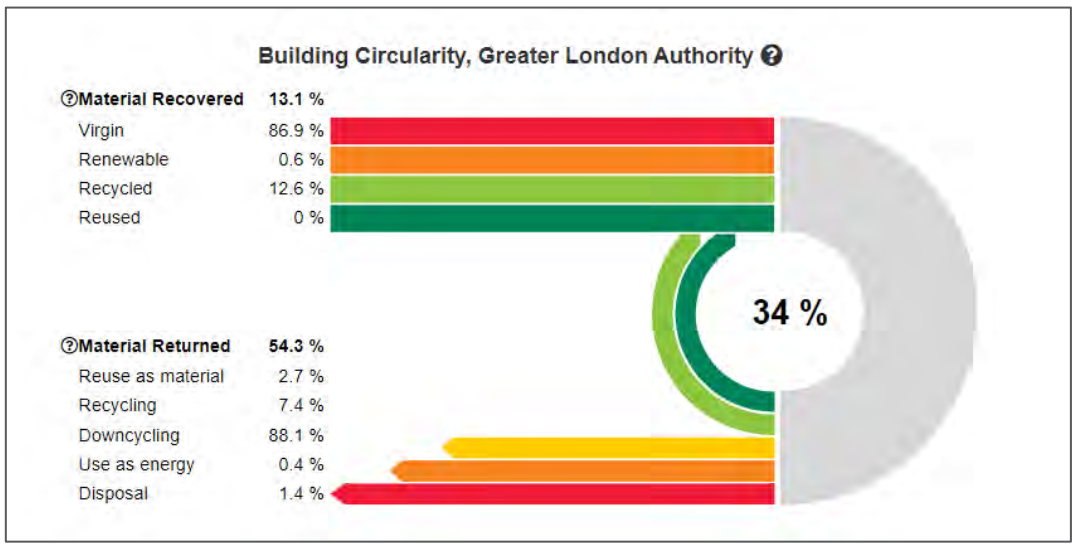

Figure 6: Building Circularity Tool

5.81 The building's circularity is evaluated in terms of the mass of the recovered building materials as compared to virgin material likely to be used in the building construction and the percentage of the material that can be returned to building construction at the end of life of the building.

5.82 'Materials recovered' (13.1%) represents the end-of-life handling of materials that were used in the project. It is the mass-based share of materials that are either recycled or reused as material, added with 'Materials Returned' (54.3%) that are either downcycled to result in a Building Circularity Score of 34%.

5.83 Although the proposed development is still at an early design phase, engagement with the design team has been undertaken to address the end-of-life strategy for the building materials and components, where possible. Once the design is progressed and develops to specify exact materials and products, the end-of-life scenarios for the building will become more detailed as a result. The main aim is to extend the lifespan of the building through careful design and specification through the measures listed herein.

5.84 Where individual elements are expected to have shorter design life periods, the development will seek to design for the repurpose and independent replacement of these individual elements. Also, exact materials and products will be selected and designed to allow for disassembly and reuse at the end of their useful life.

5.85 Building Information will be stored for the entire duration of the building's lifetime to facilitate end of life strategy, disassembly, future reuse, waste avoidance, and waste reduction. The material specification and manufacturers data sheets will be stored and updated as and when additional works are undertaken. This information can be used towards the end of life to inform the end of life strategy, disassembly, future reuse, waste avoidance, and waste reduction.

5.86 To communicate the end-of-life strategy, a disassembly manual that provides guidance on which materials, elements, or components can be reused, recycled, or composted could be produced. Where possible, the disassembly manual will include a Building Information Model (BIM) to ensure information can be easily accessible and updated where relevant. The manual will act as a guide for disassembly for those elements that have been designed to be disassembled at the end of their life within the building.

5.87 As the design progresses and the development enters the procurement stage, the Applicant will collaborate with the suppliers to ensure that a material end of life plan is determined, and that this information is stored and is accessible for the end occupier of the development. This will include information on how materials such as brick can be re-used as opposed to recycled or how connections can be dismantled to allow for the full reuse of various building elements.

5.88 The project has been assessed on the assumption of a 60 year design life, at which point material reuse and recycling technologies are expected to be more advanced than today.

6. CONCLUSION

6.1 This detailed Circular Economy Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by St William Homes LLP.

6.2 The purpose of this statement is to demonstrate that the proposed development at Mitcham Gasworks, it has considered the following circular economy principles to:

> Conserve resources and source ethically.

> Design to eliminate waste (and for ease of maintenance).

> Manage waste sustainably and at the highest value.

6.3 It demonstrates that the proposed development is compliant with the requirements of Policy SI7 of the London Plan and should be read in conjunction with the *GLA Circular Economy Spreadsheet,* which has been submitted alongside this report.

6.4 A Post Construction Completion Report is to be provided at project completion. This will seek to set out the predicted and actual performance against all numerical targets and provide updated versions of the items covered in the *GLA Circular Economy Spreadsheet*. The following reports will be prepared and included in the Post Construction Completion Report:

> Updated Site Waste Management Plan.

> Updated Bill of Materials.

> Updated Recycling and Waste Reporting table.

APPENDICES

Appendix A
Circular Economy Workshop Meeting Minutes

Appendix B
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Construction Waste Volumes

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Appendix E
Recycled Content Calculations

HODKINSON

Appendix A
Circular Economy Workshop Meeting Minutes

NOTES
MITCHAM GASWORKS – CIRCULAR ECONOMY

Held on 18th Nov 2021
Location: Zoom

Attendees: [redacted] (St William Development)
[redacted] (St William Development)
[redacted] (St William Sustainability)
[redacted] (St William Technical)
[redacted] (Rolfe Judd)
[redacted] (Rolfe Judd)
[redacted] (Rolfe Judd)
[redacted] (Hodkinson)
[redacted] (MCA)
[redacted] (Gillespies)
[redacted] (WSP)

- Discussion of Circular Economy targets
    - 95% beneficial use of excavation waste
    - 95% recycling/re-use of demolition and construction waste
    - 65% recycling of municipal waste by 2030
    - 75% recycling of commercial waste by 2030
    - 20% recycled content by value
- Requirement for pre-redevelopment audit and pre-demolition audit
    - Site is clear so no audits are required
- Pre-fabrication/modular elements to reduce on site construction
    - Bathroom pods are proposed
    - Pre-fabricated balconies are proposed
    - Further prefabricated elements can be explored as design progresses
- Embodied carbon
    - Need to ensure there is no conflict with embodied carbon targets so design and material options will be taken in consideration of both elements
- Berkeley Group sustainability standards will ensure operational recycling is maximised and that all materials and products are sourced responsibly

- Designing for longevity:
    - RC frame for durable build up
    - Hard wearing finishes, kick plats, stair treads, etc
    - Hard wearing façade
- Designing for Disassembly and recoverability
    - Avoidance of permanent fixings
    - Brick should be repurposed at end of life as opposed to disposed
- Designing for adaptability and flexibility
    - Commercial space is flexible so will be able to [redacted] use over life cycle

Appendix B
Site Waste Management Plan

Project Waste Management Plan

v5 - December 2015

Introduction

The Berkeley Group and its subsidiary companies are committed to using a Project Waste Management Plan (PWMP) on each development site, regardless of value or locality. This is deemed good practice following Government's decision to revoke the legislative requirement for Site Waste Management Plans in December 2013.

This site-specific PWMP outlines our procedures and commitments to:
- Minimise waste production through our technical, procurement and construction decision-making processes
- Manage waste efficiently on site, including the segregation of waste streams where possible
- Divert waste from landfill, through either re-use or recycling

We will take all reasonable steps to ensure that all waste from the site is dealt with in accordance with the waste duty of care in section 34 of the Environmental Protection Act 1990 and the Environmental Protection (Duty of Care) Regulations 1999.

All waste leaving the development site will be recorded in a separate 'Waste Data Tool'. The Waste Data Tool records the identity of the waste carrier and their registration number, a written description of the waste, the name of the disposal site and a record of the permit/exemption for the disposal site. Updates to the Waste Data Tool will occur at least monthly to ensure the regular monitoring, measuring and reporting of non-hazardous and hazardous wastes leaving site.

The Waste Data Tool forms part of this Project Waste Management Plan and should be reviewed in conjunction with this document.

Project Details

Name of Project	Mitcham Gasworks
Project Address	Western Road, Mitcham, CR4 3FL
Project Description	579 units. 14 new build residential apartment blocks. Former gasworks site in Mitcham with one decomissioned holder which has been partially back filled.
Project Build Value (£)	TBC
Project Start Date (*live on site*)	TBC
Project Waste Management Plan Drafted By (*name*)	ST
Project Waste Management Plan Drafted On (*date*)	09/01/2024

Project Breakdown

BRE Project Type	Residential	
Building Type	**Internal Floor Area (*square metres*)**	**Predominant Build Type**
Houses		
Apartments	38,048	RC Frame
Commercial	287	RC Frame
Student Accommodation		
Extra Care Accommodation		
Other		
Total Internal Floor Area of Structure(s) (*square metres*)	38,335	

Project Team

Project Manager	TBC
Technical Manager	TBC
Commercial Manager	TBC
Document Controller/Secretary (*if applicable*)	TBC
Person Responsible for Implementing the Project Waste Management Plan (*name*)	TBC
Person Responsible for Implementing the Project Waste Management Plan (*job title*)	TBC

Revision Record	
Date of Revision	**Purpose of Revision**
09/01/2024	Draft issue

Waste Minimisation and Management	
If there are existing buildings and/or structures to be demolished on the site, has a pre-demolition audit been undertaken?	N/a - no existing buildings and/or structures on the development site
Please provide brief details of the outcomes of the pre-demolition audit	No permanent structure. Telecoms mast temporary structure is situated on site and will be demolished once the equipment is operational elsewhere
Please outline details of the measures taken during the planning, design, procurement and construction stages to minimise and manage the production of non-hazardous wastes on this project	Clean Inert material in gasholder tanks will be preferentially excavated as part of initial material management exercise. Material from the site will be used to re-balance the gasholders up to formation level for the buildings and landscaping.
Specify three waste groups which will be / have been minimised at the design stage	**Outline waste minimisation actions taken at the design stage for the selected waste group**
Soils (Uncontaminated)	Reused to infill gasholder tanks to formation level
Soils (Contaminated)	Only soil that needs to be is being excavated to piling platform level
Bricks	Standard brick dimensions and setting out will minimise excess waste
Please outline details of the measures taken during the planning, design, procurement and construction stages to minimise and manage the production of hazardous wastes on this project	Soil that is excavated will be treated on site so it can be reused and not removed from site where possible.

Waste Stream Predictions and Management								
Waste Stream	**BRE Waste Stream Benchmarks (*m3*) (*indicative figures only*)**	**Berkeley Group Waste Stream Benchmarks (*m3*) (*indicative figures only*)**	**Predicted Amount of Waste Generated (*m3*)**	**Facilities Required**	**Projected End Destination**	**Cost of Waste Removal and Recovery / Disposal *(£/m3)***	**Predicted Waste Cost *(£)***	**Notes**
EXAMPLE: Plasterboard	*70*	*45*	*50*	*Skip: 7 cubic yard*	*Recycling Facility*	*£36*	*£1,800*	*All plasterboard to be segregated on-site for recycling*
Construction								
Asphalt and Tar	53.323985	92			Recycling facility			
Bricks	1036.463395	231			Reuse on-site			
Canteen / Welfare / Office Waste	211.034175	61			Composting facility			
Cardboard and Paper Packaging	299.2621775	228			Recycling facility			
Ceramics and Tiles	94.22743	56			Recycling facility			
Concrete (blocks, rubble, paving slabs, pipes etc)	1246.539195	763			Reuse on-site			
Electrical and Electronic Equipment	14.95065	1			Recycling facility			
Floor Coverings (carpets, vinyl etc)	20.585895	45			Recycling facility			
Furniture	4.561865	4			Recycling facility			
Glass	No Benchmark	8			Recycling facility			
Hazardous Materials (mastic tubes, spray cans, used spill kit materials etc)	50.06551	393			Hazardous waste treatment facility			
Insulation	214.52266	368			Recycling facility			
Liquids (non hazardous only, e.g. canteen oils)	16.905735	1			Incineration plant (with energy recovery)			
Metals	118.953505	341			Recycling facility			
Miscellaneous	1760.764885	1202			Recycling facility			
Oils (fuels and oily waters only)	0.728365	1			Incineration plant (with energy recovery)			
Other Plaster and Gypsum-Based Material	No Benchmark	47			Recycling facility			
Other Plastics (corex etc)	251.93762	237			Recycling facility			
Paint Tins / Containers	No Benchmark	1			Hazardous waste treatment facility			
Paper	No Benchmark	135			Recycling facility			
Plasterboard	465.348565	887			Recycling facility			
Plastic Packaging	299.2621775	501			Recycling facility			
Soils (Contaminated)	No Benchmark	12			Hazardous waste treatment facility			
Soils (Uncontaminated)	No Benchmark	2999			Reuse off-site			
Timber	951.129685	1344			Recycling facility			
Toilet Wastes (e.g. sewage effluent tank and chemical toilet wastes etc)	No Benchmark	No Benchmark			Sewage treatment works			
Demolition								
Excavation								
Soils (Uncontaminated)					Reuse on-site			reused on site to fillgasholder voids
Soils (Contaminated)					Hazardous waste treatment facility			Removed from site in circa 20yd wagon for safe treatment if not treated and reused on site

Predicted total waste volume	0	**Predicted overall reuse/recycling rate (%)**	#DIV/0!	**Predicted overall cost *(£)***	£0.00
Predicted waste volume (*excluding demolition and excavation waste*)	0	**Predicted reuse/recycling rate (%) (*excluding demolition and excavation waste*)**	#DIV/0!	**Predicted cost *(£)* (*excluding demolition and excavation waste)***	£0.00

Waste Targets		
Target Name	**Target**	**Explanation**
Berkeley Group Waste Target	**Reuse or recycle over 95% of waste**	The Berkeley Group target is to divert at least 95% of construction, demolition and excavation waste (by volume) from landfill through reuse or recycling.
BRE Waste Benchmark (m3/100m2) for the project type *Based on December 2015 data*	**Average Volume of Waste (excluding demolition and excavation waste) per 100m2 of floor area: 18.55 m3**	BRE Waste Benchmarks are derived from completed projects that use the BRE SMARTWaste Plan. The benchmarks are based on completed *new build* construction projects. The benchmarks are based on construction waste only and do not include demolition, excavation or groundworks waste. The BRE Waste Benchmarks are the average m3 of waste produced per 100m2 floor area under construction. The Target Total Project Waste Volume is calculated by multiplying the BRE Waste Benchmark by the Total Internal Floor Area of Structure(s).
	Total Project Waste Volume (excluding demolition and excavation waste): 7111.1425 m3	
BRE Waste Benchmark (m3/100m2) for the residential elements of the mixed use project *Based on December 2015 data*	**N/a - project type is not mixed use**	
	N/a - project type is not mixed use	
BREEAM Target Credits	**N/a - no elements of the development are required to be certified to BREEAM**	To achieve BREEAM credits under section 'Wst 01', non-hazardous construction waste (excluding demolition and excavation waste) generated by the construction of the building covered by BREEAM should not be greater than the value outlined.

HODKINSON

Appendix C
Construction Waste Volumes

From: [redacted]
To: [redacted]
Cc: [redacted]
Subject: RE: Mitcham Gasworks WLC & CE
Date: 29 November 2023 09:59:53
Attachments: image004.png
image005.png
image007.png
image010.png
image011.png
image945922.png

Hi [redacted]

I hope you are well.

Apologies for not coming back to you on this earlier.

There will be no [redacted] to the demolition or excavation waste points, however there would be a minor [redacted] to the construction waste volumes, as follows:

Total GIA (sqm)	BRE project type	Tonnes / 100m^2 gross floor area (BRE)	Estimated construction waste (tonnes)
38,048	Residential	15.3	5,821.3
287	Commercial	15.7	45.1
Total	-	-	**5,866.4**

Please let me know if you need anything further.

Kind regards,
[redacted]

[redacted]
Associate, Iceni Futures

[redacted]

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Appendix D
Operational Waste Strategy

DECEMBER 2023

Operational Waste Management Strategy

Mitcham Gasworks

Iceni Projects Limited on behalf of

St William Homes LLP

December 2023

ICENI PROJECTS LIMITED ON BEHALF OF ST WILLIAM HOMES LLP

Operational Waste Management Strategy MITCHAM GASWORKS

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A7. GENERAL NOTES

1. EXECUTIVE SUMMARY

1.1 Iceni Projects Ltd was commissioned by St William Homes LLP to produce an Operational Waste Management Strategy to support the planning application for the Proposed Development at Mitcham Gasworks, Merton.

1.2 With reference to the policy requirements, guidance and industry best practice detailed in Section 3, anticipated arisings have been determined on the basis of relevant data and the Proposed Development mix. Waste storage areas and locations are subsequently set out in order to demonstrate compliance with local authority policy requirements and relevant standards.

1.3 An Operational Waste Management Strategy utilising traditional wheeled bins is proposed. The Proposed Development is anticipated to produce approximately 143,592 litres of waste from residential uses per week.

1.4 Residential waste storage will consist of separate 1,110 litre Eurobins for refuse and dry recyclables, and 240 litre wheeled bins for compostable waste, in accordance with local authority guidance. Waste stores have been located within the curtilage of the residential blocks at ground level to ensure easy access for both residents and waste collection operatives.

1.5 The Proposed Development will include flexible commercial/community space. These spaces are anticipated to produce approximately 1,437 litres of refuse and recycling per week. Waste storage for these commercial spaces will consist of either 1,100 litre Eurobins or 240 litre wheeled bins to be collected by a contractual arrangement. The waste storage areas will be located within the curtilage of the buildings for ease of use and to ensure accessibility for commercial waste collection operatives.

1.6 This Strategy therefore demonstrates that the Proposed Development has been designed to be compliant with the relevant waste management policies that are set out within this report, and will manage and dispose of waste in a sustainable manner.

2. INTRODUCTION

2.1 Iceni Projects Ltd was commissioned by St William Homes LLP to produce an Operational Waste Management Strategy to support the planning application for the Proposed Development at Mitcham Gasworks, Merton.

Report Objective

2.2 This document details the operational waste management measures adopted by the Proposed Development at Mitcham Gasworks and gives an overview of the design proposals that will ensure that operational waste will be stored, collected and disposed of effectively over the lifespan of the scheme, within guidelines set out by the London Borough of Merton Council.

2.3 The report is structured to meet these guidelines as follows:

- Section 3 discusses the planning context and policies which are relevant to operational waste management;
- Section 4 discusses the development response to the policy drivers for operational waste management; and
- Section 5 summarises the development's design response.

Site and Surroundings

2.4 The site is approximately 2.43 hectares (ha) in size and sits within the Lavender Fields Ward, located in the London Borough of Merton (LBM). It is bounded by Portland Road to the north-west, the Hay Drive open space to the south-west, Field Gate Lane to the south and south-east and Western Road to the north-east. The site is currently mostly vacant, having once been a town gasworks and, more recently, as regional offices by National Grid, with a large, unused gas holder in the norther corner of the site. The existing site contains a telecommunications mast and two pressure reduction stations (PRS). A number of underground gas mains run across the site, with some requiring diversion to facilitate the redevelopment.

2.5 Access to the site is via a driveway entrance from Western Road, which connects the site with Mitcham Town Centre. Secondary vehicular access is also provided on Portland Road, just after the priority junction with Western Road.

2.6 To the north-east, at the other side of Western Road, is a large Asda supermarket and surface car park. To the west and east are two-storey homes. To the south of the site lies a recent development

that was formerly part of the same site and is now a series of three-storey residential apartments and a medical centre. To the north-west of the site, across Portland Road, are two-storey homes.

2.7 The application site is close in proximity to the town centre, with its western boundary being located 200m to the east. There are parks and open greenspaces within the wider vicinity. This includes Three Kings Piece located approximately 700m to the south-west, London Road Playing Fields located approximately 600m to the south-east, Lavender Park located approximately 460m to the north and Gorringe Park located approximately 1.2km to the north of the site.

The Proposed Development

2.8 The description of development is as follows:

> *"Full planning application for the erection of new buildings to provide residential accommodation (Class C3) and flexible commercial/community space (Class E and/or Class F2), with associated access, parking and landscaping arrangements, including the demolition of the existing telecommunications mast and re-provision of new telecommunications mast."*

2.9 The following mix of residential dwellings and commercial space will be delivered:

- 38 no. studio apartments;
- 188 no. 1-bedroom 2-person apartments;
- 130 no. 2-bedroom 3-person apartments;
- 151 no. 2-bedroom 4-person apartments;
- 6 no. 3-bedroom 4-person apartments;
- 59 no. 3-bedroom 5-person apartments;
- 7 no. 4-bedroom 6-person apartments; and
- Up to 287 sqm of flexible commercial and community uses (Use Class E and/or Class F2).

3. PLANNING AND REGULATORY CONTEXT

3.1 The means of sorting, storing and collecting operational waste are incorporated within policy and regulation as set out below:

Regional

The London Plan (Adopted March 2021)

3.2 The London Plan outlines the Mayor's commitment to creating a low carbon circular economy, in which the greatest possible value is extracted from resources before they become waste, as this is not only socially and environmentally responsible, but will save money and limit the likelihood of environmental threats affecting London's future. The following London Plan policies are relevant to waste:

3.3 **Policy SI7 (Reducing waste and supporting the circular economy)** states that resource conservation, waste reduction, increase in material re-use and recycling, and reductions in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry working in collaboration to:

- Promote a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible;
- Encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of goods;
- Ensure that there is zero biodegradable or recyclable waste to landfill by 2026;
- Meet or exceed the municipal waste recycling target of 65 per cent by 2030;
- Meet or exceed the targets for each of the following waste and materials streams:
    - Construction and demolition – 95 per cent reuse/recycling/recovery
    - Excavation – 95 per cent beneficial use
- Design developments with adequate, flexible, and easily accessible storage space and collection systems and that supports the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food waste, as well as residual waste.

3.4 **Policy D6 (Housing quality and standards)** states that housing should be designed with adequate and easily accessible storage space that that supports the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food waste, as well as residual waste.

Local

3.5 The Mitcham Gasworks development is located in the London Borough of Merton (LBM) and key LBM guidance and policy requirements are detailed below.

Merton Recycling and Waste Collection

3.6 LBM currently collects residual, recycling and food waste from residential developments on a weekly basis.

3.7 Waste from commercial properties can be collected by LBM, with a range of container options and collection frequencies to suit all types of premises. Collections can be arranged with LBM via email (uk.slwpcommercialwaste@veolia.com) or telephone (0203 991 6202). Commercial properties may also arrange collections via an alternative fully licensed private waste collection firm, as long as they are licensed by the Environment Agency.

Merton Local Development Framework: Core Planning Strategy (July 2011)

3.8 **Strategic Objective 1** in the Core Planning Strategy aims to make Merton a municipal leader in improving the environment, taking the lead in tackling climate [redacted] reducing pollution, developing a low carbon economy, consuming fewer resources and using them more effectively. This is to be achieved, in part, by applying the waste hierarchy, and by exploiting the opportunities to use energy from waste.

3.9 **Strategic Objective 6** in the Core Planning Strategy aims to make Merton an exemplary borough in mitigating and adapting to climate [redacted] and to make it a more attractive and green place. This will be achieved, in part, by applying the waste hierarchy where waste is minimised, re-used and recycled, and residual waste is disposed of sustainably and in the right location using the most appropriate means.

3.10 **Policy CS 17 (Waste Management)** states that LBM support the objectives of the sustainable waste management set out by the government in Planning Policy Statement 10: Planning for Sustainable Waste Management and within the Mayor's London Plan. It is stated that the Council will increase recycling rates and address waste as a resource, looking to disposal as the last option in line with the waste hierarchy. To support recycling, the Council will require integrated, well-designed waste storage facilities that will include recycling facilities for all new developments where appropriate.

The New Merton Local Plan (Regulation 19 Submission; December 2021)

3.11 **Policy W14.4 (Waste Management)** states that LBM support the objectives of sustainable waste management set out by the government in the National Planning Policy for Waste and the Mayor's London Plan. The Council will continue to work in collaboration with the neighbouring south London boroughs of Croydon, Kingston-upon-Thames and Sutton to maximise self-sufficiency and meet the apportionment tonnages required by the London Plan for south London. The Council will also increase recycling rates and address waste as a resource, looking to disposal as the last option, in line with the waste hierarchy. To support recycling, the Council will require integrated, well-designed waste storage facilities that will include recycling facilities for all new developments where appropriate.

3.12 Part (u) of **Policy D12.3 (Ensuring High Quality Design for All Developments)** states that facilities for recycling, storage and disposal of household waste are designed and managed in line with Merton's Waste and Recycling Storage Requirements, are part of the overall design approach, and do not adversely affect the primary building function, appearance of the building and character of the street. Part (v) of this policy goes on to state that reuse facilities should be convenient, allow bins to be manoeuvred easily and include sufficient capacity to accommodate increased recycling requirements. Refuse bins should not obstruct footways, so for sites with restricted access, suitable hardstanding should be provided for bins to be relocated to on collection days. The Council will support underground waste collection systems for major redevelopment schemes where proposed systems are accepted by the Council's appointed waste contractor and do not compromise highway safety.

3.13 Part (n) of **Policy D12.6 (Tall Buildings)** states that schemes should deliver an appropriate provision for waste, which is integrated into the overall design of the building.

Waste and Recycling Storage Requirements

3.14 The Waste and Recycling Storage Requirements document provides guidelines for architects and developers of new residential, commercial and mixed-use units in the London Borough of Merton, to ensure that the arrangements for storing, collecting and managing waste are appropriate.

3.15 The guidance states that a waste storage capacity for up to a total of 240 litres should be provided per dwelling for residual and recycling waste. The London Borough of Merton recommends that 50% of waste storage capacity be allocated for residual waste, and 50% for mixed recycling. These calculations are based on residual waste accounting for 50% of all household waste, 40% of all waste comprising paper, card, cartons, mixed cans and plastic bottles, and the remaining 10% comprising glass. This is equivalent to the provision of the following:

- one no. 1,100 litre Eurobin per 10 dwellings for the collection of residual waste;

- one no.1,100 litre Eurobin per 10 dwellings for the collection of recycling waste; and
- one no. 240 litre wheeled bin to be provided per 30 dwellings for the collection of organic waste.

3.16 Sufficient capacity for waste storage must be provided for each household to allow for extended gaps between collections owing to Bank Holidays, therefore space to store waste must be provided over a minimum of eight days.

3.17 Communal bin storage areas must be located within the footprint of the development, ideally at ground level. The storage areas should be easily accessible to the dwelling that they serve, with residents being required to walk no further than 30m from the front door to the bin storage area (excluding vertical distances).

3.18 The guidance also outlines the following design features that should be integrated within the communal bin storage areas:

- In designing facilities, the principles in BS 5906:1980 (The code of practice for storage and on-site treatment of solid waste from buildings) or any successor standard must be applied.
- Container storage areas should be in a position that is mutually convenient and easily accessible for the occupants and the collection crew.
- The design of storage areas should include hard, smooth, continuous surfaces to allow for the easy removal of the containers.
- There should be at least 1.55m clearance across the doorways (including the thickness of the doors) for the movement of a 1,100 litre bin and a clearance of 1.20m for the movement of a 240 litre bin.
- Where there are separate storage areas for residual waste and recycling, the recycling store should be the easiest to access (e.g. closest, least restricted access etc.).
- If containers are to be located in the open then ideally this area will include a fence or wall on at least three sides.
- If containers are to be located in a shed or cupboard then adequate ventilation must be provided together with electric lighting controlled by a local switch.
- Containers should be located away from windows and ventilators, to avoid any nuisance odours entering the premises.
- All locks must be a standard ‘Fire Brigade’ pattern to allow access for the fire brigade.

- There must be space available to wash down container areas at intervals and a local hose point should be provided with suitable drainage.

3.19 With respect to the collection of waste, the following guidance is provided:

- It should not be assumed that collection crews are able to carry keys, codes or electronic fobs during the collection. However, arrangements can be made for this when necessary, subject to approval from LBM Waste Operations Team. This must be discussed prior to the submission of plans.

- Containers must not be presented on or moved across a slope that exceeds 1.12 (in line with Part H of the Building Regulations 2002).

- Surfaces that containers need to move across shall be free from steps or other obstacles. If it is impossible to avoid steps they must incorporate a drop-kerb.

- The collection should not take place in an area that is regularly used by residents.

- Access to the domestic and commercial containers, must be possible from 06.00 hours to 22.00 hours, Monday to Saturday.

- Access should be planned so that it does not restrict the times in which domestic collections can be made due to existing or planned traffic control measures such as controlled parking zones, yellow lines, red routes, bus lanes, etc.

- A suitable crossover must be constructed over any public footway for an entrance way or road. It is essential that the access route for the residual waste vehicle is not blocked; hence there may be a need for yellow/white lines and other measures to control parking.

- Any gates or pinch points on the vehicle route to the residual waste storage area should give a minimum clearance width of 3.5m.

- After the collection is made the collection crews, management staff or cleaning staff should return the containers to storage. There should be clear responsibility for who carries out the task.

Other Considerations

British Standard 5906:2005

3.20 The Standard provides a code of practice for the storage, collection, segregation for recycling and recovery, and on-site treatment of waste. It applies to new buildings, refurbishments and conversions of residential and non-residential buildings. The Standard also presents typical weekly waste airings and subsequent storage requirements for a variety of building types, as shown below:

Table 3.1 Waste volume calculations for relevant non-domestic uses proposed for the Site

Building Type	Equation for weekly waste arisings (litres)
Industrial	Volume per m^2 of floor area [5 l] x floor area

4. OPERATIONAL WASTE MANAGEMENT

4.1 The operational waste management strategy for the Proposed Development has been assessed using the waste hierarchy methodology. This approach is consistent with that required by the Council, requiring new development to demonstrate how the scheme addresses waste separation, storage and collection.

4.2 For the Proposed Development, it is intended that a strategy utilising traditional wheeled bins will be adopted. The adoption of this waste management strategy will aid in maximising the area of landscaped open space provided as part of the Proposed Development, whilst also maximising pedestrian and cycle permeability through the Site.

4.3 It should be noted that the use of bin chutes for the collection of residential waste is not considered appropriate for the Proposed Development. The use of this type of system would require on-site management to ensure correct operation and management, in particular the need for management team members to rotate bins within the central store areas to ensure they do not become overfilled. This, coupled with the potential for the systems to become blocked with waste and resulting repairs, could incur significant costs that would be passed on to future residents. These costs are considered likely comparable to, if not in exceedance of, the costs associated with the proposed waste management strategy. Blockages or failures of the chute systems would also have significant impacts on future residents in that there would be no alternative for the disposal of their waste. Furthermore, the incorporation of bin chute systems within the Proposed Development would not aid in reducing the number of bins or associated space required within communal waste stores, nor would it reduce the number of waste collections required to serve the development. In fact, there is potential that additional space would be required to incorporate a system of this type, as it would need to be integrated within the corridors and internal structures at every level, with elements of the system also needing to be accommodated within the central waste stores. Finally, with the potential for chutes to become conduits for the spread of fire and smoke, the integration of a system of this type within the Proposed Development has the potential to pose a fire risk.

4.4 The waste management strategy for the Proposed Development is outlined below, with residential and non-domestic uses addressed separately.

Residential Operational Waste Management Strategy

4.5 In order to facilitate easy sorting of waste streams for residents, each dwelling will be fitted with a three-compartment waste bin, with each compartment corresponding to the relevant waste stream to be collected by the Council. This will maximise the potential for residents to correctly sort waste

within their home. Guidance for waste stream sorting and collection will be provided in the home user manual.

4.6 The anticipated arisings from the residential component of the Proposed Development are shown in the table below, based on the Council's waste capacity guidelines detailed in Section 3.

Table 4.1 Domestic weekly waste arisings

Block	Number of homes	Weekly arisings (litres)		
		Refuse	Dry recyclables	Compostable (without garden waste)
A	135	16,200	16,200	1,080
B	77	9,240	9,240	616
C	28	3,360	3,360	224
D	46	5,520	5,520	368
E	139	16,680	16,680	1,112
F	154	18,480	18,480	1,232
Total	**579**	**69,480**	**69,480**	**4,632**

4.7 When internal bins are full, residents will transfer their waste to a dedicated storage area, located within the curtilage of their block on the ground floor. In accordance with the Council's waste collection requirements, waste storage bins are defined by the waste stream as follows:

- Refuse: 1,100 litre Eurobins
- Dry recyclables: 1,100 litre Eurobins
- Compostable (without garden waste): 240 litre wheeled bins

4.8 Table 4.2 below details the dimensions of the bin type proposed for use in the residential element of the scheme.

Table 4.2 Domestic waste storage dimensions

	1,100 litre Eurobin	240 litre wheeled bin
Height (mm)	1,475	1,100
Width (mm)	1,250	580
Depth (mm)	980	740

4.9 The table below shows the number of Eurobins required in each location, and the associated minimum area required for the bin store, excluding circulation space. The below assumes both residual and recycling waste streams will be collected by the Council on a weekly basis.

Table 4.3 Domestic waste storage requirements

Location	Storing refuse for blocks	No. of dwellings	No. of 1,100 litre residual Eurobins	No. of 1,100 litre recycling Eurobins	No. of 240 litre wheeled bins	Min. area of store (m²; excluding circulation space)
Core A2	A1, A2	72	8	8	3	27.26
Core A4	A3, A4	63	7	7	3	24.12
Block B1 and B2 (Central Waste Store)	B1, B2, C, D	151	16	16	6	54.51
Block C	C	28	3	3	1	10.13
Block D	D	46	5	5	2	17.13
Block E	E1, E2, E3	139	14	14	5	47.51
Core F1	F1	62	7	7	3	24.12
Block F2 and F3	F2, F3	92	10	10	4	34.25

4.10 Both the proposed number of waste containers to be provided, and the frequency of waste collections by the Council, have been confirmed through correspondence with London Borough of Merton's Waste Team.

4.11 Locations of the bin storage areas, where all bins will be stored, are shown in Appendix A2. As demonstrated in Table 4.3 above, a total of eight waste storage locations will be provided, with weekly waste arisings to be collected by the Council's waste operatives from six of these locations on a weekly basis, accounting for a weekly transfer of waste from C and D to the waste storage area provided within Blocks B1 and B2 (Central Waste Store) by the estate management team. It should be noted that the number of waste containers located within the refuse store in Blocks B1 and B2 (Central Waste Store) is equal to the total number of waste containers to be provided for Blocks B, C and D, as the waste containers located within Blocks C and D will be transferred to the Central Waste Store once per week to enable the collection of the waste by the Council.

4.12 As required by the Council, the bin storage areas are within 30m walking distance of the front door of the blocks. Collection vehicles will have clear access to any bin. For the majority of the proposed waste storage areas, waste operatives will not be required to manoeuvre the bins more than 10m from the external door of the storage areas to the refuse collection vehicle. This is demonstrated in Appendix A3. As noted above, in order to ensure the Council's waste operatives are not required to manoeuvre Eurobins in excess of 10m, it is intended that waste collected in Blocks C and D will be transferred to a waste storage area within Block B on a weekly basis by the estate management team where it will be collected by the Council's waste operatives on a weekly basis.

4.13 The exception to the above is the bin storage area associated with Block F2, which will have a drag distance of more than 10m. It is noted, that whilst the drag distance to the closest designated loading bay is in excess of 10m, bins may still be safely dragged from the store within Block F2 to the bay. Alternatively, the site facilities management team may transfer the bins to an external storage point, shown in the figure below, as required on collection days. It should be noted that this potential area is located outside of the area that is required for parking, and would not impact on the space required for the refuse vehicle to occupy the designated loading bay.

Figure 4.1 Potential location of external bin storage area for Block F2

4.14 The turning circle for the vehicle is quoted as 18.0 metres and in-roads are able to accommodate this. The area where the vehicle will be stationed for collections will be appropriately surfaced to withstand the weight of the collection vehicle. Details of the collection vehicle are provided in Appendix A4 alongside diagrams of the swept path analysis undertaken.

4.15 Bulky waste will be accommodated within the dedicated bulky waste storage areas on the ground floor. These spaces are to be split out by core, and co-located with the waste storage areas. The locations of the bulky waste storage areas are shown in the drawings provided in Appendix A2, and the areas to be provided for each core are summarised below.

Table 4.4 Bulky waste storage provision

Block	Number of dwellings	Min. area of bulky waste store (m^2)
A	135	27.00
B	77	15.40
C	28	5.60

Block	Number of dwellings	Min. area of bulky waste store (m^2)
D	46	9.20
E	139	27.80
F	154	30.80

4.16 It is expected that, through the provision of spaces for the dedicated storage of bulky waste items, the potential for the fly tipping of waste within the proposed development will be mitigated. The provision of bulky waste storage areas will enable the storage of large items, such as tables and chairs, prior to their collection for disposal by the Council.

Non-Domestic Operational Waste Management Strategy

4.17 Approximately 287 sqm of flexible commercial/community use is to be delivered as part of the Proposed Development. Based on the information provided in BS 5906:2005 and by Rolfe Judd Architecture, the waste arisings from the non-residential elements are provided in the table below. Full details of the calculations are provided in Appendix A5.

Table 4.5 Non-domestic weekly waste arising

Location	Use	GIA (m^2)	Type	Weekly waste volume (litres)	Proportion of waste stream	
					Residual	Recycling
Block A3	Flexible Commercial / Community Use	196	Industrial*	981	50%	50%
Block A3	Flexible Commercial / Community Use	91	Industrial*	456	50%	50%

* It is noted that no traditional industrial spaces will be provided as part of the development, but that flexible commercial / community spaces will be delivered. The volumes of waste noted above have been calculated in line with those presented in Table 3.1 above, where industrial uses are considered to most appropriately represent the flexible uses to be brought forward as part of the development.

4.18 It should be noted that, whilst the nature and end users of the flexible spaces to be provided as part of the proposed development have not yet been confirmed, the waste arisings are expected to include refuse and recycling waste. The strategy outlined here will ensure that the waste arisings will be stored in bins proportionate to the volume of waste produced, and will be applicable to any use falling with the flexible commercial/community uses class that my come forward. The proposed mixture of 1,100 litre Eurobins and 240 litre wheeled bins to be provided as part of the non-domestic

waste strategy will ensure all potential uses within these spaces will be catered for with respect to operational waste management.

4.19 The bins will be located within the curtilage of the flexible community and flexible commercial spaces and will be accessible to waste collection operatives. 1,100 litre Eurobins and 240 litre wheeled bins will be provided for the storage of waste arising from both the flexible community and flexible commercial spaces. The dimensions of these bins are provided below:

Table 4.6 Non-domestic waste storage dimensions

	1,100 litre Eurobin	240 litre wheeled bin
Height (mm)	1,370	1,100
Width (mm)	1,280	580
Depth (mm)	980	740

4.20 The resulting non-domestic waste storage requirements are provided below. For the purposes of this waste management strategy, a weekly collection rate has been assumed.

Table 4.7 Non-domestic waste storage requirements

Location	Uses Served	Number of 1,100 litre Eurobins		Number of 240 litre wheeled bins		Min. area of store (m^2)
		Residual	Recycling	Residual	Recycling	
Block A3	Flexible Commercial / Community Space	1	1	-	-	3.97
Block A3	Flexible Commercial / Community Space	-	-	1	1	1.83

4.21 It is expected that waste arising from the non-residential uses will be transferred by the tenants of the spaces to the external waste storage area, shown in Figure 4.1 above, with potential routes shown in Appendix 6. To ensure minimal disruption, it is intended that all non-residential refuse collections would be arranged to take place outside of the hours at which domestic refuse collections would be expected.

4.22 In accordance with BS 5906:2005, all waste containers will need to be stored under cover in a specially designed waste storage room, or store. The walls and roofs of this store will be formed of non-combustible, robust, secure and impervious material, and have a fire resistance of one hour when tested in accordance with BS 476-21 – Fire tests on building materials and structures: Part 21

(Ref. 40), whilst the door of the store will be made of steel, or have a fire resistance of 30 minutes when tested in accordance with BS 476-22 – Fire tests on buildings materials and structure: Part 22 (Ref 41).

4.23 Further to these requirements, BS 5906:2005 outlines the measures which have been included in the design of the waste stores. Compliance with these requirements, the most applicable of which are outlined below, will help maintain a compliant waste strategy for the operation of the Proposed Development.

- All containers for waste, including recyclable material, are easily accessible to both the occupier and waste collector;
- Collectors will not have to manoeuvre waste storage containers from the storage areas to the collecting vehicles for a distance of more than 10m (four wheeled bins) or 15m (two wheeled bins);
- Paths between storage areas and collecting vehicles are free from steps, kerbs or inclines with a gradient of more than 1:12, be non-slip and a minimum of 2m wide. They will have foundations and a hardwearing surface that will withstand the loading imposed by wheeled containers;
- Waste stores have been designed and located in such a way as to limit potential noise disturbance to residents;
- Storage areas for waste and recycling will be clearly designated for this use only, by a suitable door or wall sign and, where appropriate, with floor markings;
- Waste storage sites will include areas for instructional signage detailing correct use of the facilities;
- The entrance of the waste storage room will be free from steps and projections;
- Adequate ventilation will be provided, with permanent ventilators giving a total ventilation area of no less than $0.2m^2$;
- Electrical lighting will include sealed bulkhead fittings (housings rated to IP65 in BS EN 60529:1992 (Ref. 43)) for the purpose of cleaning down with hoses and inevitable splashing. Luminaires will be low energy light fittings or low energy lamp bulbs, controlled by proximity detection or a time delay button to prevent lights being left on; and
- Gullies for wash down facilities will be positioned so as not to be in the track of container trolley wheels.

5. SUMMARY

5.1 With reference to the policy requirements, guidance and industry best practice detailed in Section 3, a comprehensive Operational Waste Management Strategy has been defined for the Proposed Development.

5.2 The Proposed Development has been designed with high standards of waste management performance. This strategy describes the consideration that has been given to waste generated by the Proposed Development during its operation, including how it will be sorted, stored and collected, therefore contributing towards the Council's targets for waste minimisation, recycling and reuse. This strategy demonstrates that circular economy principles have been embedded in the design of the Proposed Development with respect to the management of operational waste. The proposed collection of separate waste streams will encourage future residents to prioritise the recycling of materials over their disposal, in line with the waste hierarchy and the principles of circular economy, which aims to minimise the disposal of materials by maintaining their highest value where practicable.

5.3 The strategy has been prepared to demonstrate that tenants and occupiers of the Proposed Development will be provided with convenient and effective waste management systems that will promote high levels of recycling and ease of collection by the Council.

5.4 An Operational Waste Management Strategy utilising traditional wheeled bins is proposed. The Proposed Development is anticipated to produce approximately 143,592 litres of waste from residential uses per week.

5.5 Residential waste storage will consist of separate 1,110 litre Eurobins for refuse and dry recyclables, and 240 litre wheeled bins for compostable waste, in accordance with local authority guidance. Waste stores have been located within the curtilage of the residential blocks at ground level to ensure easy access for both residents and waste collection operatives.

5.6 The Proposed Development will include commercial space in the form of flexible commercial/community space. These spaces are anticipated to produce approximately 1,437 litres of refuse, recycling and food waste per week. Waste storage for these commercial spaces will consist of either 1,100 litre Eurobins or 240 litre wheeled bins to be collected by a contractual arrangement. The waste storage areas will be located within the curtilage of the buildings for ease of use and to ensure accessibility for commercial waste collection operatives.

5.7 This Strategy therefore demonstrates that the Proposed Development has also been designed to be compliant with all relevant waste management policy, and will manage and dispose of waste in a sustainable manner.

A1. SITE PLAN

NOTES

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1 The Contractor must check and confirm all dimensions
2 All discrepancies must be reported and resolved by the Architect before works commence
3 This drawing is not to be scaled
4 All work and materials to be in accordance with current applicable Statutory Legislation and to comply with all relevant Codes of Practice and British Standards

1:750 scale bar for calibration

0 7.5 15 22.5 30 37.5m

N

Rev Date

Rolfe Judd

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Client
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Project
Mitcham Gas Works
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Drawing
Illustrative Site Plan

Scale	Date	Status
1:750 (A1)	Nov 22	Information

Job Number	Drawing Number	Revision
6374	**Z2_3_90103**	**-**

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A2. GROUND FLOOR PLAN

NOTES

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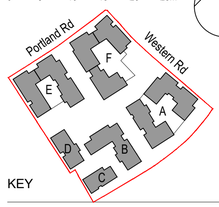

KEY

- Residential Facilities
- Commercial Space
- Ancillary Space
- 1B Private Unit
- 2B Private Unit
- 3B Private Unit
- 1B Affordable Unit
- 2B Affordable Unit
- 3B Affordable Unit
- 1B Intermediate Unit
- 2B Intermediate Unit
- 3B Intermediate Unit

Rev	Date
P05 Issued for Information	14/11/23
P04 Issued for Information	13/11/23
P03 Issued for Information	07/11/23
P02 Issued for information	17/10/23
P01 Issued for information	20/09/23

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Client
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Drawing
General Arrangement
Proposed Ground Floor Plan

Scale	Date	Status
1:500 (A1)	Sep 23	Information

Job Number	Drawing Number	Revision
6374	Z4 0 20100	P05

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A3. DRAG DISTANCES FROM PROPOSED WASTE STORES

NOTES

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3 This drawing is not to be scaled
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1:500 scale bar for calibration

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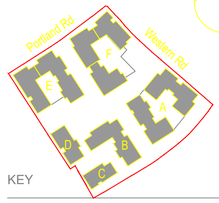

KEY

- Residential Facilities
- Commercial Space
- Ancillary Space
- 1B Private Unit
- 2B Private Unit
- 3B Private Unit
- 1B Affordable Unit
- 2B Affordable Unit
- 3B Affordable Unit
- 1B Intermediate Unit
- 2B Intermediate Unit
- 3B Intermediate Unit
- Distance from refuse storage area
- Area designated for servicing movements and servicing loading bay

Rev	Date
P05 Issued for Information	14/11/23
P04 Issued for Information	13/11/23
P03 Issued for Information	07/11/23
P02 Issued for information	17/10/23
P01 Issued for information	20/09/23

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Drawing
General Arrangement
Proposed Ground Floor Plan

Scale	Date	Status
1:500 (A1)	Sep 23	Information

Job Number	Drawing Number	Revision
6374	Z4 0 20100	P05

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A4. REFUSE COLLECTION VEHICLE SPECIFICATIONS

Sufficient room should be allowed to manoeuvre and load a vehicle of the following dimensions:

- Length = 11 metres
- Width = 2.5 metres
- Height = 3.5 metres
- Turning circle = 18.0 metres

A fully laden collection vehicle will weigh approximately 26 tonnes. The access road therefore must have a road surface that is able to hold a vehicle of this size.

Overhead service cables, pipes, archways and other potential obstacles must be at least 7 metres from ground level.

REFUSE VEHICLE ENTERING SET DOWN AREA

REFUSE VEHICLE EXITING SET DOWN AREA

NOTES:

1. THIS DRAWING IS INDICATIVE AND SUBJECT TO DISCUSSIONS WITH LOCAL & NATIONAL HIGHWAY AUTHORITIES. THIS DESIGN IS ALSO SUBJECT TO CONFIRMATION OF LAND OWNERSHIP, TOPOGRAPHY, LOCATION OF STATUTORY SERVICES, DETAILED DESIGN AND TRAFFIC MODELLING.
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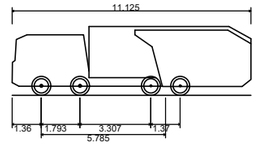
VEHICLE PROFILE:



Phoenix 2-25W (with Volvo FM12 chassis) w/ Wing Mirrors

Overall Length	11.125m
Overall Width	2.530m
Overall Body Height	3.205m
Min Body Ground Clearance	0.410m
Track Width	2.500m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	9.250m

E	06.06.2023	REVISED LAYOUT	AP	SP	SP
D	11.11.2022	REVISED LAYOUT	AP	SP	SP
C	10.11.2022	REVISED LAYOUT	AP	SP	SP
B	08.11.2022	REVISED LAYOUT	AP	NM	SP
A	2022.10.20	REVISED VEHICLE TRACKING	AP	SP	SP

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CLIENT

ST WILLIAM

PROJECT

MITCHAM GAS WORKS

TITLE

SITE LAYOUT REVIEW

(REFUSE VEHICLE)

DRAWN BY	CHECKED BY	APPROVED BY
AP	SP 19.10.2022	SP 19.10.2022

SCALE @ A3	DATE	
1 : 250	19.10.2022	
PROJECT NO.	**DRAWING NO.**	**REV.**
21-T078	25.5	E

Iceni Projects accept no responsibility for any unauthorised amendments to this drawing. Only figured dimensions are to be worked to.

REFUSE VEHICLE ENTERING PROPOSED TURNING AREA

REFUSE VEHICLE EXITING PROPOSED TURNING AREA

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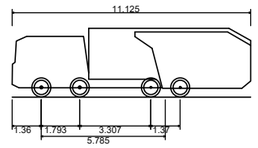
VEHICLE PROFILE:



Phoenix 2-25W (with Volvo FM12 chassis) w/ Wing Mirrors

Overall Length	11.125m
Overall Width	2.530m
Overall Body Height	3.205m
Min Body Ground Clearance	0.410m
Track Width	2.500m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	9.250m

D	11.11.2022	REVISED LAYOUT	AP	SP	SP
C	10.11.2022	REVISED LAYOUT	AP	SP	SP
B	08.11.2022	REVISED LAYOUT	AP	NM	SP
A	2022.10.20	REVISED VEHICLE TRACKING	AP	SP	SP

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CLIENT

ST WILLIAM

PROJECT

MITCHAM GAS WORKS

TITLE

SITE LAYOUT REVIEW

(REFUSE VEHICLE)

DRAWN BY	CHECKED BY	APPROVED BY
AP	SP 19.10.2022	SP 19.10.2022

SCALE @ A3	DATE	
1 : 500	19.10.2022	
PROJECT NO. 21-T078	DRAWING NO. 25.11	REV. D

Iceni Projects accept no responsibility for any unauthorised amendments to this drawing. Only figured dimensions are to be worked to.

A5. NON-DOMESTIC WASTE CALCULATIONS

Location	Use	Area (GIA; sqm)	Class	BS5906 metric	Equation	Volume (l)	Residual proportion	Recycling proportion	Residual 1,100 litre Eurobins	Recycling 1,100 litre Eurobins	Residual 240 litre wheeled bins	Recycling 240 litre wheeled bins	Footprint (m^2)
Block A3	Flexible Commercial / Community Space	196	Industrial*	N/A	Volume per m^2 floor area [5 l] x floor area	981	50%	50%	1	1			3.97
Block A4	Flexible Commercial / Community Space	91	Industrial*	N/A	Volume per m^2 floor area [5 l] x floor area	456	50%	20%			1	1	1.83

* It is noted that no traditional industrial spaces will be provided as part of the development, but that flexible commercial / community spaces will be delivered. The volumes of waste noted above have been calculated in line with those presented in Table 3.1 above, where industrial uses are considered to most appropriately represent the flexible uses to be brought forward as part of the development.

A6. INDICATIVE ROUTES TO WASTE COLLECTION POINT

NOTES

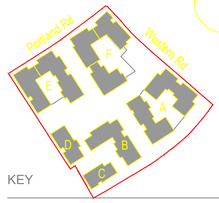
Copyright Rolfe Judd Ltd

1 The Contractor must check and confirm all dimensions
2 All discrepancies must be reported and resolved by the Architect before works commence
3 This drawing is not to be scaled
4 All work and materials to be in accordance with current applicable Statutory Legislation and to comply with all relevant Codes of Practice and British Standards

1:500 scale bar for calibration

0 5 10 15 20 25m

N



KEY

- Residential Facilities
- Commercial Space
- Ancillary Space
- 1B Private Unit
- 2B Private Unit
- 3B Private Unit
- 1B Affordable Unit
- 2B Affordable Unit
- 3B Affordable Unit
- 1B Intermediate Unit
- 2B Intermediate Unit
- 3B Intermediate Unit
- Indicative route to refuse collection point
- Area designated for servicing movements and servicing loading bay

Rev	Date
P05 Issued for Information	14/11/23
P04 Issued for Information	13/11/23
P03 Issued for Information	07/11/23
P02 Issued for information	17/10/23
P01 Issued for information	20/09/23

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Client
St. William

Project
Mitcham Gas Works
CR4 3ED

Drawing
General Arrangement
Proposed Ground Floor Plan

Scale	Date	Status
1:500 (A1)	Sep 23	Information

Job Number	Drawing Number	Revision
6374	Z4 0 20100	P05

G:\6374\Z_Design\Scheme 4\General\Z4\20\Z4_0_20100

A7. GENERAL NOTES

A7.1 The report is based on information available at the time of the writing and discussions with the client during any project meetings. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by Iceni Projects Ltd for inaccuracies in the data supplied by any other party.

A7.2 The review of planning policy and other requirements does not constitute a detailed review. Its purpose is as a guide to provide the context for the development and to determine the likely requirements of the Local Authority.

A7.3 No site visits have been carried out, unless otherwise specified.

A7.4 This report is prepared and written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and [redacted] in guidance may necessitate a re-interpretation of the report in whole or in part after its original submission.

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A7.6 The report is provided for sole use by the Client and is confidential to them and their professional advisors. No responsibility whatsoever for the contents of the report will be accepted to any person other than the client, unless otherwise agreed.

A7.7 These terms apply in addition to the Iceni Projects Ltd "Standard Terms of Business" (or in addition to another written contract which may be in place instead thereof) unless specifically agreed in writing. (In the event of a conflict between these terms and the said Standard Terms of Business the said Standard Terms of Business shall prevail). In the absence of such a written contract the Standard Terms of Business will apply.

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Appendix E
Recycled Content Calculations

REUSED AND RECYCLED CONTENT CALCULATIONS

	Material quantity (kg)	Material intensity (kg/m²)	Recycled content by value
Substructure	31,857,325	533.21	27.56%
Superstructure: Frame	19,109,014	319.84	47.99%
Superstructure: Upper Floors	24,982,619	418.15	40.74%
Superstructure: Roof	5,253,374	87.93	4.3%
Superstructure: External Walls	13,499,389	255.95	3.33%
Superstructure: Windows and External Doors	833,240	14.78	3.75%
Superstructure: Internal Walls and Partitions	2,400,293	40.17	36.87%
Superstructure: Internal Doors	411,605	7.39	0%
Finishes	1,160,249	19.42	10.39%
Fittings, furnishes, and equipment	497,147	8.32	27.16%
External works	8.833,226	147.85	1.26%
Total	**110,884,900**	**1,855.94**	**15.41%**

Mitcham Gasworks

Circular Economy Statement
Prepared by Hodkinson

January 2024

St William
Designed for life

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HODKINSON

Circular Economy Statement

St William Homes LLP

Mitcham Gasworks

Final

[redacted]
BSc (Hons), MSc, CEnv, MIEMA

January 2024

HODKINSON

DOCUMENT CONTROL RECORD
REPORT STATUS: FINAL

ABOUT HODKINSON CONSULTANCY

Our team of technical specialists offer advanced levels of expertise and experience to our clients. We have a wide experience of the construction and development industry and tailor teams to suit each individual project.

We are able to advise at all stages of projects from planning applications to handover.

Our emphasis is to provide innovative and cost-effective solutions that respond to increasing demands for quality and construction efficiency.

This report has been prepared by Hodkinson Consultancy using all reasonable skill, care and diligence and using evidence supplied by the design team, client and where relevant through desktop research.

Hodkinson Consultancy can accept no responsibility for misinformation or inaccurate information supplied by any third party as part of this assessment.

This report may not be copied or reproduced in whole or in part for any purpose, without the agreed permission of Hodkinson Consultancy of Rickmansworth, Hertfordshire.

Executive Summary

This detailed Circular Economy Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by St William Homes LLP. This Circular Economy Statement relates to the revised proposals submitted in December 2023.

The purpose of this statement is to demonstrate that the proposed development at Mitcham Gasworks, has considered the following circular economy principles to:

> Conserve resources and source ethically.

> Design to eliminate waste (and for ease of maintenance).

> Manage waste sustainably and at the highest value.

The commitments below have been set to ensure that [redacted] are made at a strategic level in order to ensure that the core principles of Circular Economy are adopted:

> A minimum of 95% of non-hazardous construction waste is to be recycled or reused.

> Municipal waste recycling target of 65% by 2030 for residential and 75% for commercial.

> At least 25% of materials will include reused or recycled content by value, where feasible.

> 100% of timber used on site, including timber used in the construction phase, will be sourced from sustainable forestry sources (e.g., PEFC and FSC).

> The development will be designed to meet long-term resident needs, be robust, durable, and resilient to climate [redacted]

> Target of no less than 50% for substructure and up to 60-70% for the superstructure for cement replacement and for steel, a 23-30% recycled content is targeted.

> All residential units and the self-storage building will be provided with access to a refuse store, supporting the separate collection of dry recyclables (mixed plastics, metals, glass, card and paper) and food waste.

> All residential units will be provided with a user guide to promote the principles of circular economy.

Further different strategic approaches that can be adopted and how they could be incorporated have also been outlined in the report and will support a circular economy approach for the development. This report has demonstrated that the proposed development is compliant with the requirements of Policy SI7 of the London Plan.

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Appendix A Operational Waste Strategy

Appendix B Site Waste Management Plan

Appendix C Construction Waste Volumes

Appendix D Recycled Content Calculations

1. INTRODUCTION

1.1 This detailed Circular Economy Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by St William Homes LLP.

1.2 The purpose of this statement is to demonstrate that the proposed development at Mitcham Gasworks, has considered the following circular economy principles to:

> Conserve resources and source ethically.

> Design to eliminate waste (and for ease of maintenance).

> Manage waste sustainably and at the highest value.

1.3 The above has been undertaken throughout RIBA stages 2/3 and this statement will be included within the information being submitted to the London Borough of Merton.

1.4 The aim of circular economy is to retain the value of materials and resources indefinitely, with no residual waste at all. This is possible but will require a fundamental [redacted] in the way that buildings are designed, built, operated, and deconstructed.

1.5 This report should be read in conjunction with the *GLA Circular Economy Spreadsheet* which will be submitted alongside this report.

2. DEVELOPMENT OVERVIEW

Site Location

2.1 The proposed development site is approximately 2.43ha in size and sits within the Lavender Fields Ward, located in the London Borough of Merton, as shown in Figure 1 below. It is bounded by Portland Road to the northwest, open space with Hay Drive beyond to the west, Field Gate Lane to the southeast and Western Road to the northeast.

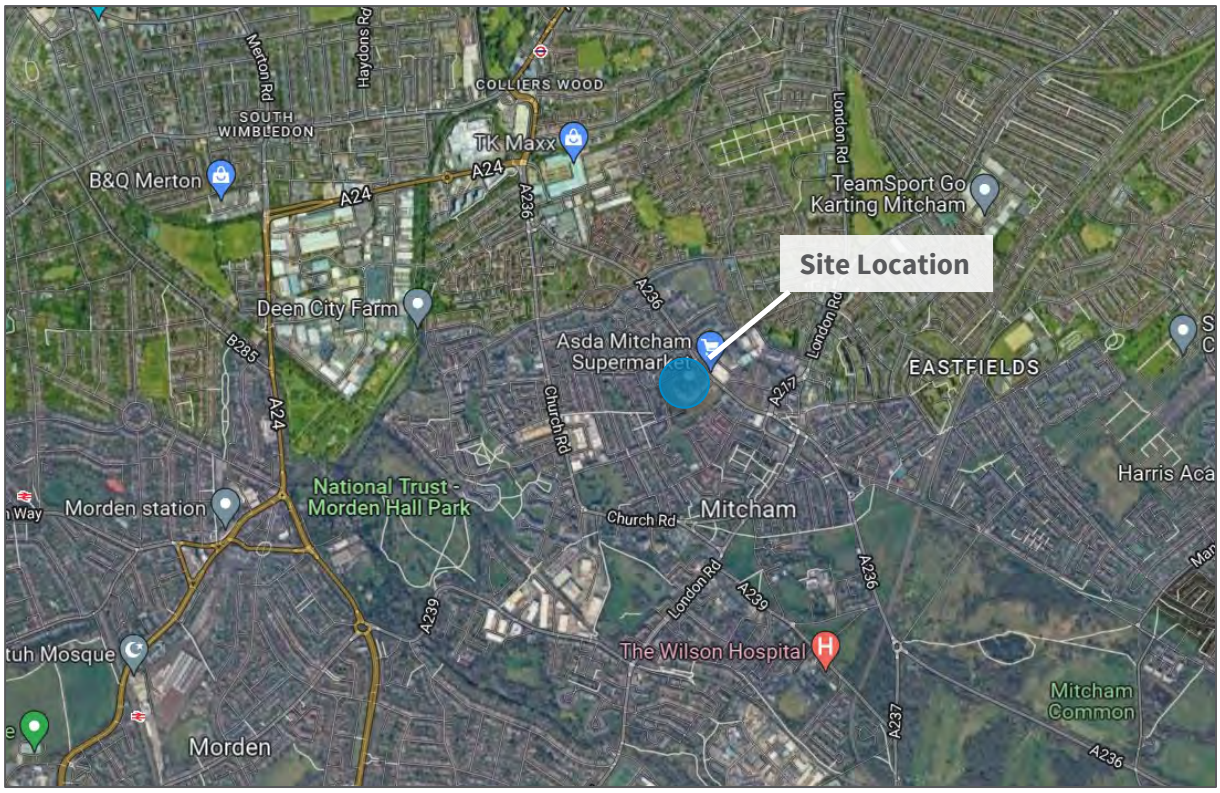

Figure 1: Site Location – Map data © 2022 Google

Proposed Development

2.2 The proposed development is described as follows:

"Erection of new buildings to provide residential accommodation (Class C3) and flexible commercial/community space (Class E and/or Class F2), with associated access, parking and landscaping arrangements, including the demolition of the existing telecommunications mast and re-provision of new telecommunications mast."

2.3 Figure 2 below illustrates the proposed site plan at ground floor level.

Figure 2: Proposed Site Plan

2.4 The total Gross Internal Floor Area (GIA) is 59,746 m^2. This consists of the following use classes:

> Residential: 53,229 m^2

> Commercial: 287 m^2

> Communal: 6,230 m^2

2.5 The principles noted within this report apply to this GIA.

Existing Buildings

2.6 The site was formerly in use as a gasworks by National Grid, with a large gasholder in the northern corner of the site. The gasholder frame was demolished in 2021 under prior approval20/P0703. The main access to the site is via Western Road, with a secondary entrance of Portland Road. The existing site contains a telecommunications mast and two pressure reduction stations (PRS). A

number of underground gas mains run across the site, with some requiring diversion to facilitate redevelopment.

2.7 The telecoms tower will be demolished once the equipment has been reinstalled on top of a building in the first phase of the development. The tower will be removed in pieces using a mobile crane to take the load while an operative cuts the mast into pieces, following a temporary works design and lifting plan. Once demolished, the final phase of the development will commence.

2.8 The site is otherwise vacant, with high walls or fences around all boundaries. No public access is possible and the site acts as a barrier to the permeability of the area. The nature of the sites boundaries also contributes to an unattractive and uninviting environment along the routes that run adjacent to the site, including Portland Road, Western Road and Field Gate Lane.

Circular Economy Workshop

2.9 A workshop was held with key members of the design team. Early collaboration between the key stakeholders ensured that Circular Economy Principles can be achieved and embedded in the design.

2.10 The following elements were discussed:

- **Pre-redevelopment and Pre-Demolition Audit:** As the site is clear it was determined that no audits were required.
- **Pre fabrication and modular:** To reduce on-site construction, pre-fabricated materials, and modular units will be specified where possible, at this stage the following was discussed:
    - Bathroom pods will be modular and prefabricated balconies are proposed.
    - Additional aspects of design will aim to be prefabricated, with further decisions to be made as the design progresses.
- **Embodied carbon:** To ensure there is no conflict with embodied carbon targets, all circular economy measures that are proposed will be discussed with Hodkinson Consultancy to ensure the carbon impact is taken into consideration.

3. POLICY AND REGULATIONS

3.1 This chapter highlights the policies and regulations which are relevant to the proposed development at Mitcham Gasworks.

London Plan (2021)

3.2 The London Plan sets out an integrated economic, environmental, transport and social framework for the development of London. The following policies are considered relevant to the proposed development and this Statement:

Policy SI7 Reducing Waste and supporting the Circular Economy.

A. Waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by:

1. Promoting a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible;

2. Encouraging waste minimisation and waste avoidance through the reuse of materials and using fewer resources in the production and distribution of products;

3. Designing developments with adequate and easily accessible storage space that supports the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass, and food).

B. Referable applications should promote circular economy outcomes and aim to be net zero-waste. A Circular Economy Statement should be submitted, to demonstrate:

1. How all materials arising from demolition and remediation works will be re-used and/or recycled.

2. How the proposal's design and construction will enable building materials, components, and products to be disassembled and re-used at the end of their useful life.

3. Opportunities for managing as much waste as possible on site.

4. Adequate and easily accessible storage space to support recycling and re-use.

5. How much waste the proposal is expected to generate, and how and where the waste will be handled.

6. How performance will be monitored and reported.

Local Policy: London Borough of Merton

Core Planning Strategy (2011)

3.3 The London Borough of Merton's Core Planning Strategy was adopted in 2011. The following policies are considered relevant to this Statement:

3.4 **Policy CS 14 Design** encourages high quality sustainable design that meets urban design and climate [redacted] objectives.

3.5 **Policy CS 17 Waste Management** requires integrated, well-designed waste storage facilities that will include recycling facilities for all new developments where appropriate.

Draft New Local Plan

3.6 The Draft New Local Plan sets out the council's statutory planning policy framework for the borough. It sets out the level of growth which needs to be planned for in Merton and identifies where that growth should be located and how it should be delivered

3.7 The Council are in the advanced stages of their new Local Plan Review, with examination hearings having taken place in June 2022 (Stage 1) and October 2022 (Stage 2). Following the closure of the examination hearings, the Council have been working with the Planning Inspectors to consider revisions made during the course of the examination (Main Modifications). The latest version of Merton's Local Plan incorporating all of the proposed modifications was published in September 2022. Further modifications are expected to be published for consultation as the next stage of the Local Plan Review, before the Plan can be adopted.

3.8 The draft policies are material considerations but carry limited weight at this time.

3.9 **Strategic Policy CC2.1 Promoting Sustainable Design to Mitigate and Adapt to Climate** [redacted] states that development must:

> Minimise greenhouse gas emissions and support the transition to a low carbon society by maximising energy efficiency, low carbon heat and local renewable energy generation.

> Support the principles of the circular economy and promote more effective resource use.

> Recognise and adapt to Merton's [redacted] climate and ensure that development mitigates the risk of overheating and flooding and maximises comfort and wellbeing in a [redacted] climate.

> Maximise opportunities to enhance green infrastructure and tree planting to deliver multifunctional benefits such as minimising the urban heat effect, enhancing natural carbon sinks and improving air quality.

> Promote healthy and sustainable lifestyles in line with Merton's net-zero carbon target.

3.10 **Policy CC2.5 Minimising Waste and Promoting a Circular Economy** requires development to undertake a Whole Life-Cycle Carbon assessment proportionate to the scale of development and demonstrate that whole life-cycle carbon savings have been maximised. Source and prioritise materials that can easily be maintained, repaired and renewed. Specify sustainably and locally sourced, low impact and re-used or recycled materials.

Guidance Documents

3.11 Guidance was released by the Greater London Authority (GLA) *"Circular Economy Statement Guidance",* issued in March 2022. It outlines guidance on Circular Economy statements that should accompany all referable planning applications in line with the London Plan Policy SI 7.

3.12 The guidance notes that Circular Economy Statements should be submitted at the following stages:

> Full application (RIBA Stage 2/3) - Detailed Circular Economy Statement outlining how the principles will be addressed through detailed design.

> Post-completion stages (RIBA Stage 5/6) - Post-Planning Updates should outline the progress in meeting the targets and commitment can be provided during the construction process.

3.13 As the proposed development, in the London Borough of Merton is already at RIBA Stage 2/3 with a full application being submitted, a detailed Circular Economy Statement is required.

4. CIRCULAR ECONOMY PRINCIPLES

4.1 A circular economy is defined in the London Plan Policy *SI7 'Reducing Waste and Supporting the Circular Economy'* as one where materials are retained in use at their highest value for as long as possible and are then reused or recycled, leaving a minimum of residual waste.

4.2 In contrast to a linear economy (take, make, dispose), a circular economy keeps products and materials circulating through the system at their highest value for as long as possible, through re-use, recycling, refurbishment, and remanufacturing.

4.3 The end goal is to retain the value of materials and resources indefinitely, with no residual waste at all. This is possible but will require a fundamental [redacted] in the way that buildings are designed, built, operated, and deconstructed.

4.4 Applying circular economy thinking to the built environment is complex, with many overlapping issues and trade-offs to consider. However, there are some core guiding principles that promote a regenerative and restorative whole systems approach that should be applied on every project. These are as follows:

1. **Conserve resources and source ethically**

> Minimise the quantities of materials used

> Minimise the quantities of other resources used

> Specify and source materials and other resources responsibly and sustainably

2. **Design to eliminate waste (and for ease of maintenance)**

> Design for longevity, adaptability or flexibility and reusability or recoverability

> Design out construction, demolition, excavation, and municipal waste arising

3. **Manage waste sustainably and at the highest value**

> Manage demolition waste

> Manage excavation waste

> Manage construction waste

> Manage municipal waste

4.5 Adoption of these three core principles on developments typically reduce the amount of raw and new materials required. Alongside this, a reduction in vehicle movements, air pollution, noise and greenhouse gas emissions would also be beneficial. There are also benefits from cost savings through the reduction in materials required.

Method Statement

Berkeley Group 'Our Vision' (2030)

4.6 As part of the Berkeley Group, St William Homes LLP will ensure that the Proposed Development achieves the goals and targets set out in the 'Our Vision' document.

4.7 Berkeley Group's approach to sustainability is about considering the future. It is about developing the homes and places of the future without compromising the ability of the younger generations to meet their needs.

4.8 Berkeley Group consider the long-term impacts of their activities an ensure that they take action to reduce them both in terms of running the business efficiently and considerately and by developing sustainable homes and places. Berkeley has had a strong commitment to sustainability and environmental management across the business for many years, with their Sustainability and Climate [redacted] policies launched in 2007. Berkeley Group's sustainability strategy sets out the approach to maintaining a leadership position by embedding sustainability within the business and setting out key focus areas which seek to protect, enhance and inspire. To meet these ambitions, Berkeley Group have five focus areas – Climate action, Communities and sustainable living, Nature, Environmental management and Resources.

4.9 This Circular Economy Statement supports the wider business strategy 'Our Vision' and is supported by sustainability standards that set out the detail on how Berkeley Group manage sustainability and circular economy principles through their projects and in their business.

Berkeley Group sustainability standards

4.10 Specific design requirements are required on each Berkeley Group development and as such, need to be implemented. The relevant sustainability standards applicable to this statement are as follows:

4.11 Resources and Material Efficiency: All developments will reduce their impact on key resources and work collaboratively with the supply chain to procure sustainable materials by:

> Providing internal recycling facilities to all new homes.

> Ensuring that materials and products are sourced responsibly.

> Ensuring that all timber is FSC or PEFC certified and has a Chain of Custody.

5. APPROACH TO CIRCULAR ECONOMY

Strategic Design Making

5.1 The GLA decision tree within the *GLA Circular Economy Spreadsheet* has been used to determine the most appropriate design approach for the site. This has determined to be a 'new building' based on the questions within the spreadsheet.

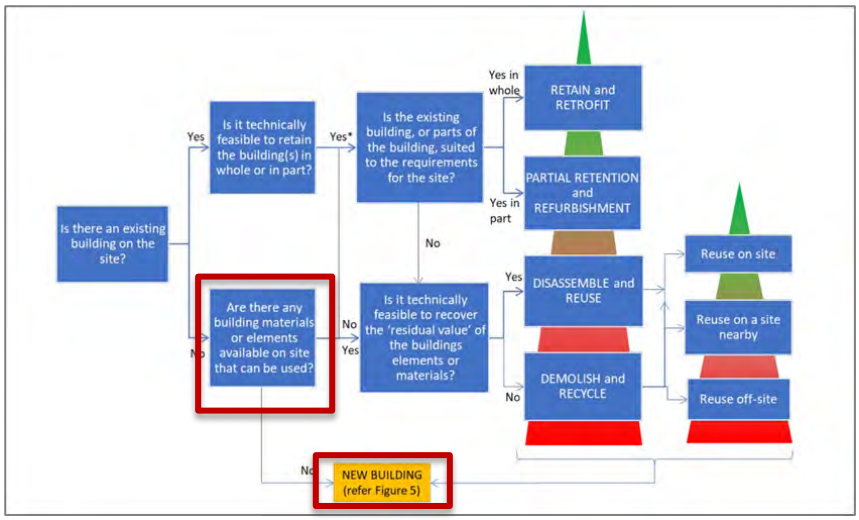

Figure 3: Decision tree for design approaches for existing structures/buildings (Circular Economy Statement guidance, GLA, March 2022)

5.2 St William Homes LLP are aiming to make [redacted] at a strategic level to ensure that the core principles of circular economy are adopted where feasible. Identifying and applying these approaches during concept design will enable them to be incorporated as part of the development brief.

5.3 Further different strategic approaches that can be adopted and how they could be incorporated are listed below.

Targets and Monitoring

5.4 Circular economy targets have been agreed with the design team and will be used to influence decisions and design as we progress through the project. These are outlined below:

> Demolition waste materials (non-hazardous) – 95%

> Excavation waste materials – 95%

> Construction waste materials – 95%

> Municipal waste – residential (by 2030) – 65%

> Municipal waste – business (by 2030) – 75%

> Recycled content – 25%

5.5 An overview on how the Applicant will meet these targets is outlined in this report and in the accompanying GLA spreadsheet.

5.6 To monitor the targets, the Applicant will ensure that waste associated with the enabling works (demolition and excavation waste) and construction will be accurately recorded via a Site Waste Management Plan. Operational waste will be measured post-construction to ensure that the targets set are achieved. Finally, the recycled content will be monitored through the development of the actual Bill of Materials.

5.7 More detailed information on the monitoring process is outlined in later section of this report.

Conserve Resources

Existing Buildings

5.8 Various above ground structures have existed on site previously, including gasholders, industrial units, and office buildings. The site was cleared (ahead of St William owning the site) and the 30m gasholder frame was recently demolished, although the lower structure and foundations remain. The 65m telecoms mast remains and will be relocated on site.

5.9 As the site was cleared prior to St William's involvement and ownership of the site, a pre-demolition audit and pre-redevelopment audit is not required and has not been undertaken by St William. Any hard standing discovered on site will be 100% reused in the proposed development.

Sustainable Procurement

5.10 St William Homes LLP will operate within the wider Berkeley Group Sustainable Procurement Strategy. They define sustainable specification and procurement to be the responsible selection and sourcing of products and services, considering environmental, social, economic and ethical aspects over their whole lifecycle. This procurement strategy aims to do the following:

- Select contractors based on their sustainability credentials and work in partnership to create a more sustainable supply chain
    - Encourage all contractors to have appropriate policies and management systems in place as standard.
    - Work in partnership with appointed contractors to ensure that the environmental and social impacts of their work are minimised and that each operative is appropriately trained.
    - Encourage contractors to sign up to the Supply Chain Sustainability School.
- Preferentially source sustainable products and materials.
    - Consider transportation distance and mode, including from the original source of extraction/manufacture.
    - Review the sustainability credentials of materials and their suppliers as part of the procurement process.
- Consider the sustainability of materials from the outset and specify sustainable products throughout the design process
    - Consider environmental impacts when specifying products and ISO 20400 Sustainable Procurement Standard where appropriate.
    - Specify products with consideration to the likely source and processing locations of materials, with a preference given to those which are produced within Organisation for Economic Co-operation and Development (OECD) countries.
    - Incorporate sustainable specification aspirations within briefs for consultants and architects.
    - Give preference to materials which have a low environmental impact, have high recycled content, and have recognised sustainability ratings.

5.11 They have an extensive materials supply chain which is critical to meeting production needs. To support resilience and continuity of supply for typical materials, Berkeley Group are launching a new materials strategy and are forming strategic agreements with suppliers. They will ensure materials meet quality, safety and sustainability requirements and are procured ethically.

5.12 They will build on this further by preferentially partnering with companies that share their commitment to climate action, maximising the use of products with lower embodied carbon, and working together on sustainability targets such as waste reduction and following the principles of the circular economy.

5.13 Materials from suppliers who participate in responsible sourcing schemes such as the BRE BES 6001:2008 Responsible Sourcing Standard will be targeted, where feasible. In addition, products with a recognised environmental product declaration (EPD) will be targeted where possible.

5.14 All timber specified will be legally harvested and traded timber and will be sourced from schemes supported by the Central Point of Expertise for Timber Procurement such as Forest Stewardship Council (FSC) accreditation – which ensures that the harvest of timber and non-timber products maintains the forest's ecology and its long-term viability.

5.15 St William LLP have undertaken studies on recycled content in concrete. The aim is to increase cement replacement to as high as technically feasible- no less than 50% for substructure and up to 60-70% for the superstructure. For steel, a 23-30% recycled content is targeted in line with current advise from British Steel.

Recycled Content of Materials

5.16 The Applicant is committed to target a benchmark of 25% reused or recycled content by value., where feasible. A brief bill of materials summary table has been provided in the *GLA Circular Economy Template*, submitted alongside this application.

Minimised Material Use

5.17 Adopting a design approach that focuses on material resource efficiency so that less material is used in the design (e.g., lean design), and / or less waste is produced in the construction process, without compromising the design concept.

5.18 The heights of the proposed buildings have been reduced following consultation with the GLA, Merton Council, the Design Panel, and the local community. Through the reduction of building heights, the overall material use has been reduced.

5.19 Off cuts from plasterboard works will be stored on pallets for use in more detailed work near completions. Also, it is proposed that smaller off cuts are to be used for filling in ceiling voids and any plasterboard in temporary partitions are to be re-used as inner skin of permanent walls, whenever practicable.

5.20 The development has taken steps to ensure other resource use will be kept to a minimum. Examples include:

> The development will achieve a total reduction in regulated CO_2 emissions of 56% through be lean, be clean and be green on-site measures and will provide homes that are energy efficient and incorporate Low and Zero Carbon technologies.

> All new dwellings will target a minimum internal water efficiency standard of 105 litres/person/day in accordance with the London Plan Policy SI5 and the optional tighter Building Regulations Approved Document G requirement (110 litres/person/day).

5.21 A ground contamination assessment has found that the site is of high risk of contaminants and appropriate remediation works will need to take place. Remediation of contaminated land removes threats to health and safety, and enables land, to be improved that would otherwise be left.

Cut and Fill

5.22 The cut and fill sequence has been reviewed in detail to maximise the re-use of material on site via treatment and distribution.

5.23 Taking the assumed existing site levels, the buildings, landscaping, and roads build up has been subtracted to provide the formation level (below pile mat). The difference between the existing and proposed formation level is then calculated and then multiplied by the area to equal the total cut and total fill volumes. Added to these are the piles, pile caps, ground beams/rafts, surface water attenuation tanks and utilities distribution trenches which will require redistribution or carting off-site.

5.24 It is assumed that the gasholder void will be left unfilled so that some of these arising's can be used to fill this structure. A first draft for the overall quantity of arising's has been put together by St William and is outlined below:

> The total formation arising's CUT = 13,486m^3

> The total formation arising's FILL = -5,895m^3 (Gasholder volume = -5,662m^3)

> The substructure and infrastructure arising's for the development = 8,109m^3

> Site won hard for re-use across site = 2,569m^3

> The volume of disposed off-site material = 12,054m^3

5.25 Locations where the landscaped areas might be artificially raised to create mounds will be investigated within the landscape design. Further options for lowering the site and graded to meet boundary levels have been explored.

Eliminating Waste

Designing for Longevity

5.26 The proposed development will seek to design with longevity in mind. Examples include protecting materials from degradation due to environmental conditions, adopting passive design strategies to provide resilience, and sizing systems to cope with future climate scenarios.

5.27 The development will include a reinforced concrete build up, improving the structural integrity and durability of the buildings. This reduces the long-term maintenance requirements, promoting longevity within design.

5.28 Appropriate durability measures will be incorporated in vulnerable parts of the internal building to minimise the frequency of replacing materials and therefore optimising material use. These measures are likely to include:

> Hard-wearing floor finishes.

> Stair treads.

> Kick plates on doors and

> Kerbs in servicing/vehicle areas.

5.29 Durable, hard-wearing, and low-maintenance façade materials are also proposed.

5.30 Various energy saving sustainable initiatives will be included in the design, such as highly insulated external fabric and walls, and low-energy lighting throughout.

Designing for Assembly, Disassembly and Recoverability

5.31 The proposed development will be designed with disassembly in mind as well as maintenance and replacement of elements. Where feasible, assets will seek to be designed to allow for easy assembly and reconfiguration, for alternative future uses.

5.32 Materials, where possible, will have the option to be taken apart through mechanical and reversable fixings to allow for future reuse. Permanent fixing of products, such as by glue and cement mortar, will be minimised where feasible, to enable end of life deconstruction and salvage of building elements.

5.33 The building envelope will predominantly comprise of brickwork, and therefore at the end-of-life stage, all brick material will be repurposed.

5.34 A brief end-of-life strategy will be developed at detailed design to demonstrate how the building materials, components and products could be disassembled and reused at the end of their useful life.

5.35 At this RIBA stage, a detailed Bill of Materials is not yet available and will instead be provided in time for the Post Construction Circular Economy Statement. In accordance with GLA guidance, the Bill of Materials will include kg/m^2 for the proposed new development and will commit to exceeding the benchmark of 25% (by value) reused or recycled content. A brief bill of materials summary table has been provided in the GLA spreadsheet.

Designing for Adaptability or Flexibility

5.36 The project has been largely designed with projecting bolt-on balconies, allowing for these to be manufactured off site. Some layouts incorporate fully recessed balconies, which are also being constructed as recessed bolt on balconies.

5.37 The flexible commercial/community space offer further opportunities for the site and the future tenants. This space will therefore be designed with flexible use in mind, ensuring that the site will cater for the requirements and demands of time.

5.38 Infrastructure and hard landscaping are typically less adaptable than other elements of the built environment. At present a resilient hard landscaping design has been designed which enables servicing and maintainability. The detailed design of the site layout should include opportunities to make it adaptable, this could include the use of moveable planters and limiting the use of adhesives and fixings.

Standardisation

5.39 The proposed development will consider designing and construction methods by applying, where feasible, standardised elements for materials and products that enable a reduction in construction waste and easier reuse in next life.

5.40 The plasterboard contractor (once appointed) is to be set a target of 5% waste within their contract conditions, based on final fixed quantities of plasterboard.

5.41 It will be a requirement that plasterboard sheet sizes will be matched to storey height, loading out to correct quantities.

Managing Waste

Site Waste Management

5.42 Prior to any Enabling works beginning on site, a Project Waste Management Plan will be drafted, a draft copy has been provided in **Appendix B.** The plan will include details on waste minimisation strategies incorporated in design and procurement stages. It will also include information on how waste will be managed during the construction phase, along with predictions for various waste streams.

5.43 The Waste Hierarchy Strategy is currently employed on all St William site, to minimise the volume of wastes produced and divert waste from landfill as far as reasonably practicable. This will also be true for the proposed demolition and remediation works. A target of 95% (volume) recycle/ reuse for demolition and construction waste will be set on this project.

5.44 The location of the waste handling site that materials will be taken to, will vary dependent upon their specific make up, of which is yet to be confirmed. Notification of the likely destination of all waste streams (incl. beyond the Materials Recycling Facility) will be provided, including confirmation that the destination landfill(s) has/have the capacity to receive waste.

5.45 Waste facility sites in Morden, Lower Morden, Mitcham, and Merton Abbey may be used amongst others as appropriate. Wherever possible, materials will be recycled and re-used either onsite, or provided for use elsewhere. Waste segregation will take place during construction as far as the site allows logistically to give the highest possible recycling rates.

5.46 A strategy will be put in place to minimise the space taken by storage of new materials. Frequently used items will be placed in easy to access areas. This will increase efficiency and minimise wastage due to damage. Prolonged storage of materials on site will be avoided, where possible, and implementation of 'just in time' deliveries will be encouraged.

5.47 Waste segregation will take place during construction as far as the site allows logistically to give the highest possible recycling rates.

5.48 The energy and water consumptions of the project will be monitored, either through sub-metering or reading utility bills, to allow comparison against best practice benchmarks and improvements made.

5.49 Iceni projects (November 2023) have calculated the estimated construction waste for the project, this is shown in Table 1 and is also included in **Appendix C** for reference. These above figures have been used in the accompanying Circular Economy Spreadsheet.

Table 1: Construction waste volume (Iceni, December 2023)

Total GIA (sqm)	BRE project type	Tonnes per 100m² (GFA)	Estimated construction waste (tonnes)
38,048	Residential	15.3	5,821.3
287	Commercial	15.7	45.1
Total	**-**	**-**	**5,866.4**

Construction Waste Monitoring

5.50 The Berkeley Group Waste Data Tool (WDT) will be used to monitor the volume and type of waste produced on site. Details of the waste produced on site will be analysed periodically. Charts demonstrating the percentage of waste recycled and the type of waste produced will be displayed on the project office and site welfare area to raise staff awareness.

5.51 The tool can be used to demonstrate 'Duty of Care' in ensuring waste produced on site is being disposed of in accordance with legislation. It is proposed that periodic due diligence checks will also be carried out at the end disposal facilities accepting waste from the project.

5.52 As part of their commitment to divert construction waste from landfill, St William Homes LLP will be required to regularly monitor and record the site's waste reduction performance. They aim to reuse or recycle 95% of waste from landfill (excluding hazardous waste) by 2025 from their sites. A benchmark of 95% potential excavation waste, excluding hazardous waste will be put to beneficial reuse.

Operational Waste

5.53 Waste reduction during the operational phase is also being considered for opportunities in implementing waste mitigation measures for the potential impacts arising during the operation of the development to ensure that such measures are consistent with both national and local waste policies and targets.

5.54 The Waste Hierarchy strategy in accordance with the London Plan will be used to ensure that waste is reduced or reused prior to being put out for recycling or refuse collection. The waste hierarchy, as shown in Figure 4 below, establishes waste management options according to what is best for the environment. It places great importance on preventing waste in the first place. When waste is created it prioritises preparing if for re-use, then recycling, recovery and lastly disposal (e.g., landfill).

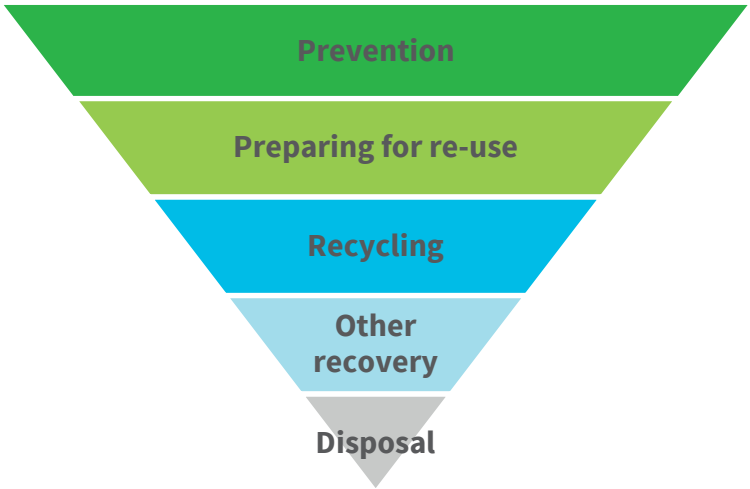

Figure 4: Waste Hierarchy

Waste Arising & Storage - Dwellings

5.55 To facilitate easy sorting of waste streams for residents, each dwelling will be fitted with a three-compartment waste bin, with each compartment corresponding to the relevant waste stream to be collected by the Council. This will maximise the potential for residents to correctly sort waste within their home. Guidance for waste stream sorting and collection will be provided in the home user manual.

5.56 The anticipated arisings from the residential component of the Proposed Development are shown in Table 2 below.

Table 2: Domestic waste arisings

Block	Homes	Weekly arisings (litres)		
		Refuse	Dry recyclables	Compostable
A	135	16,200	16,200	1,080
B	77	9,240	9,240	616
C	28	3,360	3,360	224
D	46	5,520	5,520	368
E	139	16,680	16,680	1,112
F	154	18,480	18,480	1,232
Total	**579**	**69,480**	**69,480**	**4,632**

5.57 When internal bins are full, residents will transfer their waste to a dedicated storage area, located within the curtilage of their block on the ground floor. In accordance with the Council's waste collection requirements, waste storage bins are defined by the waste stream as follows:

> **Refuse:** 1,100 litre Eurobins.

> **Dry recyclables:** 1,100 litre Eurobins.

> **Compostable (without garden waste):** 240 litre wheeled bins.

5.58 Table 3 below shows the number of Eurobins required in each location, and the associated minimum area required for the bin store, excluding circulation space. The below assumes both residual and recycling waste streams will be collected by the Council on a weekly basis.

Table 3: Domestic waste storage requirements

Location	Storing refuse for blocks	No. of dwellings	No. of 1,100 l residual bin	No. of 1,100 l recycling bin	No. of 240 l bin	Min. area of store (m^2)
Core A2	A1, A2	72	8	8	3	27.26
Core A4	A3, A4	63	7	7	3	24.12
Block B1, and B2 (Central Waste Store)	B1, B2, C, D	151	16	16	6	54.51
Block C	C	28	3	3	1	10.13
Block D	D	46	5	5	2	17.13
Block E	E1, E2, E3	139	14	14	5	47.51
Core F1	F1	62	7	7	3	24.12
Block F2 and F3	F2, F3	92	10	10	4	34.25

5.59 Locations of the bin storage areas, where all bins will be stored, is shown in Figure 5 below.

Figure 5: Refuse Store Locations (Rolfe Judd, December 2023)

5.60 As demonstrated in the table above, a total of eight waste storage locations will be provided, with weekly waste arisings to be collected by the Council's waste operatives from six of these locations on a weekly basis, accounting for a weekly transfer of waste from Blocks C and D to the waste storage area provided within Block B by the estate management team.

5.61 The turning circle for the refuse vehicle is quoted as 18.0 metres and in-roads are able to accommodate this.

Waste Arising & Storage – Commercial

5.62 The anticipated arisings from the commercial component of the Proposed Development are shown in Table 4.

Table 4: Commercial waste storage requirements

Location	Use	GIA (m^2)	Type	Weekly waste volume (litres)	Proportion of waste stream	
					Residual	Recycling
Block A3	Flexible Commercial / Community Use	196	Industrial	981	50%	50%
Block A3	Flexible Commercial / Community Use	91	Industrial	456	50%	50%

5.63 The bins will be located within the curtilage of the flexible commercial and community spaces and will be accessible to waste collection operatives. 1,100 litre Eurobins and 240 litre wheeled bins will be provided for the storage of waste arising from both the flexible community and flexible commercial spaces. The resulting non-domestic waste storage requirements are provided in the table overleaf. For the purposes of this waste management strategy, a weekly collection rate has been assumed.

Table 5: Non-domestic waste storage requirements

Location	Use Type	Number of 1,100 litre Eurobins		Number of 240 litre wheeled bins		Min. area of store (m^2)
		Residual	Recycling	Residual	Recycling	
Block A3	Flexible Commercial / Community Space	1	1	-	-	3.97
Block A3	Flexible Commercial / Community Space	-	-	1	1	1.83

Operational Waste

5.64 The reduction of operational waste from developments is essential to reducing their environmental impacts. The expected volume of waste alongside necessary provisions and management for ensuring that waste is both minimised and properly processed should be outlined and then managed.

5.65 The implementation of an Operational Waste Strategy is best industry practice and imperative for good environmental performance in buildings. Iceni Projects Limited (December 2023) have produced a strategy as shown in **Appendix A**, this demonstrates that the Proposed Development has been designed to be compliant with all relevant waste management policy and will manage and dispose of waste in a sustainable manner.

5.66 New residents and property occupants will be encouraged to reduce and prevent waste through good practice measures such as providing information packs to residents about how the waste segregation and recycling scheme operates in the proposed development.

5.67 The information packs will also include details on waste prevention schemes in and around the borough such as:

- **Too Good to Go** – Aims to reduce food waste, it is a mobile application that connects restaurants and stores that have unsold, surplus food with customers who can then buy whatever food the outlet considers surplus to requirements, at a much lower price than normal.
- **Local Charities –** Sustainable Merton is a local environmental charity in Merton that inspires, engages and influences local people and partner organisations to be the solution to environmental issues.
- **Reuse and Recycling Centres** - Reuse and recycling centres allow occupants and residents to dispose of a wide range of reusable and recyclable items for free.
    - Garth Road Household Reuse and Recycling is located in the London Borough of Merton and is open to the public. If visiting by car, bookings should be made online at least five days in advance.
- **Freecycle Network; and Freegle** – These are networks that aims to increase reuse and reduce landfill by offering a free online based service where people can give away and ask for things that would otherwise be thrown away.
- **Sustainable Merton** – Merton's local environmental charity aiming to inspire and educate the community to take action against climate [redacted] and waste reduction and prevention in particular.

5.68 For more detailed information on the Operational Waste Management Strategy, the report submitted by Iceni Projects Limited should be referred to (December 2023).

Operational Waste Monitoring

5.69 The development is committed to meet the mayor's 65% target for municipal waste recycling by 2030 (75% for commercial spaces) and will strive to ensure no biodegradable or recyclable waste is sent to landfill by 2026, once the proposed development is operational.

5.70 Building Management (or a separate contractor engaged on their behalf) would undertake a regular monitoring inspection of each of the waste storage arrangements across the site and the waste collection arrangements, with information on both waste storage areas and waste collection records to be recorded as a minimum.

5.71 Unless otherwise advised through separate discussions, building management would notify London Borough of Merton of any [redacted] to the site waste management arrangements proposed to be brought forward as a result of the review programme and have these agreed (in writing if required) prior to implementation and operation at the site.

5.72 As the detailed design for the proposed development continues, the potential to include for smart logistics, such as the provision of 'smart' bins and the consideration of weather and traffic data to inform the routes of refuse collection services may be considered. Further to this, refuse management during the operation of the development will account for the waste management needs of the existing surrounding properties and any development coming forward to ensure the most efficient management of waste within the area may be achieved. This may also include the delivery of community-led waste minimisation schemes, such as the establishment of a community-led reuse centre. It is noted, however, that considering it is intended that waste be managed through the use of the London Borough of Merton's refuse services, the incorporation of any smart logistics, or the delivery of community-led waste minimisation schemes will be done so in consideration of the services available.

Recycling Waste Reporting Form

5.73 The recycling and waste metrics reporting will be provided by the main contractor, once appointed. This will be agreed with the project manager and a site waste management plan, which will contain improved estimates for figures shown in Table 6 below.

Table 6: Recycling and Waste Reporting – Construction and Municipal Waste

	Excavation Waste	Demolition Waste	Construction Waste	Municipal Waste
Total Estimate (t/m² GIA)	0.246	0	0.136	0.127
% Reused on or off site	>95%	0	>95%	>65% (Resi) >75% (Non-resi)
% Recycled or composted, on or off site				
% to landfill	<5%	0	<4%	

		Excavation Waste	Demolition Waste	Construction Waste	Municipal Waste
% not reused or recycled	**% to other management (e.g. incineration)**	0%	0	<1%	Max 35% and no recyclable or compostable waste

Plans for Implementation

5.74 Considerations for circular economy implementation will be required through active engagement with key stakeholders at each stage, of which include (but not limited to):

> Principal Contractor and Sub-contractors (when appointed).

> Project Architect.

> Structural Engineers.

> Transport Consultants.

> Client.

5.75 A brief plan of implementation (short, medium, and long term) and action list will be compiled throughout the early stages of design. Key actions to include:

> Structural team to ensure ongoing review of cement replacement content and recycled content of steel.

> Continue to update and refine cut and fill calculations.

5.76 Such requirements, along with the projects strategic approach to implementing circular economy principles, will be included in tendering specifications to contractors, ensuring responsibilities in line with these aspirations are embedded from the earliest opportunity.

5.77 Waste is a key performance indicator included in project performance dashboards for St William Homes LLP for the ongoing monitoring of construction waste by site managers. This will help to ensure that construction waste targets (95% diversion from landfill) are met.

5.78 St William Homes LLP will continue to work with the design team to identify and provide solutions on key challenges with material use with the aim to reduce this even further.

5.79 It is proposed the following actions are taken to implement and monitor the actions included in this Circular Economy Statement:

> Ensure a site specific SWMP is produced (post planning) and populated with the targets and actual waste data.

> Provide an updated bill of materials.

> Update recycling and waste forms.

> Provide reused or recycled content calculations and building weight calculations.

> Undertake a lesson learned workshop at the end of the project.

End of Life Strategy

5.80 The One Click LCA Building Circularity tool was used to estimate the opportunity for returning the material at the end of life of the building. The results presented here are based on the inputs used for the whole life carbon assessment (Hodkinson Consultancy, December 2024). Whilst impossible to predict construction processes and minimum recycling rates in 60 years time, One Click has made assumptions based on current practices and industry benchmarks to enable a reasonable estimation to be undertaken.

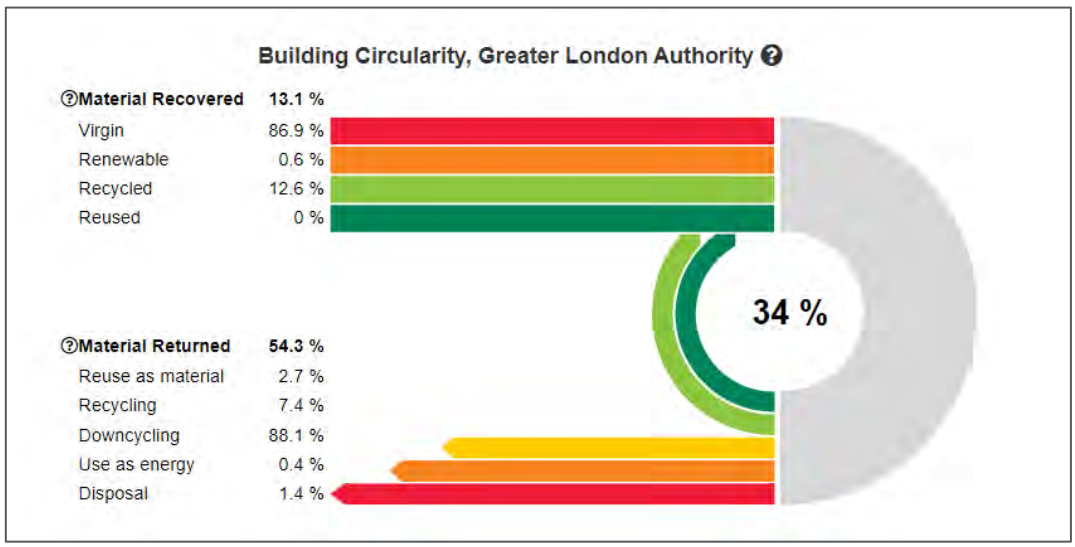

Figure 6: Building Circularity Tool

5.81 The building's circularity is evaluated in terms of the mass of the recovered building materials as compared to virgin material likely to be used in the building construction and the percentage of the material that can be returned to building construction at the end of life of the building.

5.82 'Materials recovered' (13.1%) represents the end-of-life handling of materials that were used in the project. It is the mass-based share of materials that are either recycled or reused as material, added with 'Materials Returned' (54.3%) that are either downcycled to result in a Building Circularity Score of 34%.

5.83 Although the proposed development is still at an early design phase, engagement with the design team has been undertaken to address the end-of-life strategy for the building materials and components, where possible. Once the design is progressed and develops to specify exact materials and products, the end-of-life scenarios for the building will become more detailed as a result. The main aim is to extend the lifespan of the building through careful design and specification through the measures listed herein.

5.84 Where individual elements are expected to have shorter design life periods, the development will seek to design for the repurpose and independent replacement of these individual elements. Also, exact materials and products will be selected and designed to allow for disassembly and reuse at the end of their useful life.

5.85 Building Information will be stored for the entire duration of the building's lifetime to facilitate end of life strategy, disassembly, future reuse, waste avoidance, and waste reduction. The material specification and manufacturers data sheets will be stored and updated as and when additional works are undertaken. This information can be used towards the end of life to inform the end of life strategy, disassembly, future reuse, waste avoidance, and waste reduction.

5.86 To communicate the end-of-life strategy, a disassembly manual that provides guidance on which materials, elements, or components can be reused, recycled, or composted could be produced. Where possible, the disassembly manual will include a Building Information Model (BIM) to ensure information can be easily accessible and updated where relevant. The manual will act as a guide for disassembly for those elements that have been designed to be disassembled at the end of their life within the building.

5.87 The project has been assessed on the assumption of a 60 year design life, at which point material reuse and recycling technologies are expected to be more advanced than today.

6. CONCLUSION

6.1 This detailed Circular Economy Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by St William Homes LLP.

6.2 The purpose of this statement is to demonstrate that the proposed development at Mitcham Gasworks, it has considered the following circular economy principles to:

> Conserve resources and source ethically.

> Design to eliminate waste (and for ease of maintenance).

> Manage waste sustainably and at the highest value.

6.3 It demonstrates that the proposed development is compliant with the requirements of Policy SI7 of the London Plan and should be read in conjunction with the *GLA Circular Economy Spreadsheet,* which has been submitted alongside this report.

6.4 A Post Construction Completion Report is to be provided at project completion. This will seek to set out the predicted and actual performance against all numerical targets and provide updated versions of the items covered in the *GLA Circular Economy Spreadsheet*. The following reports will be prepared and included in the Post Construction Completion Report:

> Updated Site Waste Management Plan.

> Reused or Recycled Content Calculations.

> Updated Bill of Materials.

> Updated Recycling and Waste Reporting table.

APPENDICES

Appendix A
Operational Waste Strategy

Appendix B
Site Waste Management Plan

Appendix C
Construction Waste Volumes

Appendix D
Recycled Content Calculations

Appendix A
Operational Waste Strategy

DECEMBER 2023

Operational Waste Management Strategy

Mitcham Gasworks

Iceni Projects Limited on behalf of

St William Homes LLP

December 2023

ICENI PROJECTS LIMITED ON BEHALF OF ST WILLIAM HOMES LLP

Operational Waste Management Strategy MITCHAM GASWORKS

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A7. GENERAL NOTES

1. EXECUTIVE SUMMARY

1.1 Iceni Projects Ltd was commissioned by St William Homes LLP to produce an Operational Waste Management Strategy to support the planning application for the Proposed Development at Mitcham Gasworks, Merton.

1.2 With reference to the policy requirements, guidance and industry best practice detailed in Section 3, anticipated arisings have been determined on the basis of relevant data and the Proposed Development mix. Waste storage areas and locations are subsequently set out in order to demonstrate compliance with local authority policy requirements and relevant standards.

1.3 An Operational Waste Management Strategy utilising traditional wheeled bins is proposed. The Proposed Development is anticipated to produce approximately 143,592 litres of waste from residential uses per week.

1.4 Residential waste storage will consist of separate 1,110 litre Eurobins for refuse and dry recyclables, and 240 litre wheeled bins for compostable waste, in accordance with local authority guidance. Waste stores have been located within the curtilage of the residential blocks at ground level to ensure easy access for both residents and waste collection operatives.

1.5 The Proposed Development will include flexible commercial/community space. These spaces are anticipated to produce approximately 1,437 litres of refuse and recycling per week. Waste storage for these commercial spaces will consist of either 1,100 litre Eurobins or 240 litre wheeled bins to be collected by a contractual arrangement. The waste storage areas will be located within the curtilage of the buildings for ease of use and to ensure accessibility for commercial waste collection operatives.

1.6 This Strategy therefore demonstrates that the Proposed Development has been designed to be compliant with the relevant waste management policies that are set out within this report, and will manage and dispose of waste in a sustainable manner.

2. INTRODUCTION

2.1 Iceni Projects Ltd was commissioned by St William Homes LLP to produce an Operational Waste Management Strategy to support the planning application for the Proposed Development at Mitcham Gasworks, Merton.

Report Objective

2.2 This document details the operational waste management measures adopted by the Proposed Development at Mitcham Gasworks and gives an overview of the design proposals that will ensure that operational waste will be stored, collected and disposed of effectively over the lifespan of the scheme, within guidelines set out by the London Borough of Merton Council.

2.3 The report is structured to meet these guidelines as follows:

- Section 3 discusses the planning context and policies which are relevant to operational waste management;
- Section 4 discusses the development response to the policy drivers for operational waste management; and
- Section 5 summarises the development's design response.

Site and Surroundings

2.4 The site is approximately 2.43 hectares (ha) in size and sits within the Lavender Fields Ward, located in the London Borough of Merton (LBM). It is bounded by Portland Road to the north-west, the Hay Drive open space to the south-west, Field Gate Lane to the south and south-east and Western Road to the north-east. The site is currently mostly vacant, having once been a town gasworks and, more recently, as regional offices by National Grid, with a large, unused gas holder in the norther corner of the site. The existing site contains a telecommunications mast and two pressure reduction stations (PRS). A number of underground gas mains run across the site, with some requiring diversion to facilitate the redevelopment.

2.5 Access to the site is via a driveway entrance from Western Road, which connects the site with Mitcham Town Centre. Secondary vehicular access is also provided on Portland Road, just after the priority junction with Western Road.

2.6 To the north-east, at the other side of Western Road, is a large Asda supermarket and surface car park. To the west and east are two-storey homes. To the south of the site lies a recent development

that was formerly part of the same site and is now a series of three-storey residential apartments and a medical centre. To the north-west of the site, across Portland Road, are two-storey homes.

2.7 The application site is close in proximity to the town centre, with its western boundary being located 200m to the east. There are parks and open greenspaces within the wider vicinity. This includes Three Kings Piece located approximately 700m to the south-west, London Road Playing Fields located approximately 600m to the south-east, Lavender Park located approximately 460m to the north and Gorringe Park located approximately 1.2km to the north of the site.

The Proposed Development

2.8 The description of development is as follows:

> *"Full planning application for the erection of new buildings to provide residential accommodation (Class C3) and flexible commercial/community space (Class E and/or Class F2), with associated access, parking and landscaping arrangements, including the demolition of the existing telecommunications mast and re-provision of new telecommunications mast."*

2.9 The following mix of residential dwellings and commercial space will be delivered:

- 38 no. studio apartments;
- 188 no. 1-bedroom 2-person apartments;
- 130 no. 2-bedroom 3-person apartments;
- 151 no. 2-bedroom 4-person apartments;
- 6 no. 3-bedroom 4-person apartments;
- 59 no. 3-bedroom 5-person apartments;
- 7 no. 4-bedroom 6-person apartments; and
- Up to 287 sqm of flexible commercial and community uses (Use Class E and/or Class F2).

3. PLANNING AND REGULATORY CONTEXT

3.1 The means of sorting, storing and collecting operational waste are incorporated within policy and regulation as set out below:

Regional

The London Plan (Adopted March 2021)

3.2 The London Plan outlines the Mayor's commitment to creating a low carbon circular economy, in which the greatest possible value is extracted from resources before they become waste, as this is not only socially and environmentally responsible, but will save money and limit the likelihood of environmental threats affecting London's future. The following London Plan policies are relevant to waste:

3.3 **Policy SI7 (Reducing waste and supporting the circular economy)** states that resource conservation, waste reduction, increase in material re-use and recycling, and reductions in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry working in collaboration to:

- Promote a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible;
- Encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of goods;
- Ensure that there is zero biodegradable or recyclable waste to landfill by 2026;
- Meet or exceed the municipal waste recycling target of 65 per cent by 2030;
- Meet or exceed the targets for each of the following waste and materials streams:
    - Construction and demolition – 95 per cent reuse/recycling/recovery
    - Excavation – 95 per cent beneficial use
- Design developments with adequate, flexible, and easily accessible storage space and collection systems and that supports the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food waste, as well as residual waste.

3.4 **Policy D6 (Housing quality and standards)** states that housing should be designed with adequate and easily accessible storage space that that supports the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food waste, as well as residual waste.

Local

3.5 The Mitcham Gasworks development is located in the London Borough of Merton (LBM) and key LBM guidance and policy requirements are detailed below.

Merton Recycling and Waste Collection

3.6 LBM currently collects residual, recycling and food waste from residential developments on a weekly basis.

3.7 Waste from commercial properties can be collected by LBM, with a range of container options and collection frequencies to suit all types of premises. Collections can be arranged with LBM via email (uk.slwpcommercialwaste@veolia.com) or telephone (0203 991 6202). Commercial properties may also arrange collections via an alternative fully licensed private waste collection firm, as long as they are licensed by the Environment Agency.

Merton Local Development Framework: Core Planning Strategy (July 2011)

3.8 **Strategic Objective 1** in the Core Planning Strategy aims to make Merton a municipal leader in improving the environment, taking the lead in tackling climate [redacted] reducing pollution, developing a low carbon economy, consuming fewer resources and using them more effectively. This is to be achieved, in part, by applying the waste hierarchy, and by exploiting the opportunities to use energy from waste.

3.9 **Strategic Objective 6** in the Core Planning Strategy aims to make Merton an exemplary borough in mitigating and adapting to climate [redacted] and to make it a more attractive and green place. This will be achieved, in part, by applying the waste hierarchy where waste is minimised, re-used and recycled, and residual waste is disposed of sustainably and in the right location using the most appropriate means.

3.10 **Policy CS 17 (Waste Management)** states that LBM support the objectives of the sustainable waste management set out by the government in Planning Policy Statement 10: Planning for Sustainable Waste Management and within the Mayor's London Plan. It is stated that the Council will increase recycling rates and address waste as a resource, looking to disposal as the last option in line with the waste hierarchy. To support recycling, the Council will require integrated, well-designed waste storage facilities that will include recycling facilities for all new developments where appropriate.

The New Merton Local Plan (Regulation 19 Submission; December 2021)

3.11 **Policy W14.4 (Waste Management)** states that LBM support the objectives of sustainable waste management set out by the government in the National Planning Policy for Waste and the Mayor's London Plan. The Council will continue to work in collaboration with the neighbouring south London boroughs of Croydon, Kingston-upon-Thames and Sutton to maximise self-sufficiency and meet the apportionment tonnages required by the London Plan for south London. The Council will also increase recycling rates and address waste as a resource, looking to disposal as the last option, in line with the waste hierarchy. To support recycling, the Council will require integrated, well-designed waste storage facilities that will include recycling facilities for all new developments where appropriate.

3.12 Part (u) of **Policy D12.3 (Ensuring High Quality Design for All Developments)** states that facilities for recycling, storage and disposal of household waste are designed and managed in line with Merton's Waste and Recycling Storage Requirements, are part of the overall design approach, and do not adversely affect the primary building function, appearance of the building and character of the street. Part (v) of this policy goes on to state that reuse facilities should be convenient, allow bins to be manoeuvred easily and include sufficient capacity to accommodate increased recycling requirements. Refuse bins should not obstruct footways, so for sites with restricted access, suitable hardstanding should be provided for bins to be relocated to on collection days. The Council will support underground waste collection systems for major redevelopment schemes where proposed systems are accepted by the Council's appointed waste contractor and do not compromise highway safety.

3.13 Part (n) of **Policy D12.6 (Tall Buildings)** states that schemes should deliver an appropriate provision for waste, which is integrated into the overall design of the building.

Waste and Recycling Storage Requirements

3.14 The Waste and Recycling Storage Requirements document provides guidelines for architects and developers of new residential, commercial and mixed-use units in the London Borough of Merton, to ensure that the arrangements for storing, collecting and managing waste are appropriate.

3.15 The guidance states that a waste storage capacity for up to a total of 240 litres should be provided per dwelling for residual and recycling waste. The London Borough of Merton recommends that 50% of waste storage capacity be allocated for residual waste, and 50% for mixed recycling. These calculations are based on residual waste accounting for 50% of all household waste, 40% of all waste comprising paper, card, cartons, mixed cans and plastic bottles, and the remaining 10% comprising glass. This is equivalent to the provision of the following:

- one no. 1,100 litre Eurobin per 10 dwellings for the collection of residual waste;

- one no.1,100 litre Eurobin per 10 dwellings for the collection of recycling waste; and
- one no. 240 litre wheeled bin to be provided per 30 dwellings for the collection of organic waste.

3.16 Sufficient capacity for waste storage must be provided for each household to allow for extended gaps between collections owing to Bank Holidays, therefore space to store waste must be provided over a minimum of eight days.

3.17 Communal bin storage areas must be located within the footprint of the development, ideally at ground level. The storage areas should be easily accessible to the dwelling that they serve, with residents being required to walk no further than 30m from the front door to the bin storage area (excluding vertical distances).

3.18 The guidance also outlines the following design features that should be integrated within the communal bin storage areas:

- In designing facilities, the principles in BS 5906:1980 (The code of practice for storage and on-site treatment of solid waste from buildings) or any successor standard must be applied.
- Container storage areas should be in a position that is mutually convenient and easily accessible for the occupants and the collection crew.
- The design of storage areas should include hard, smooth, continuous surfaces to allow for the easy removal of the containers.
- There should be at least 1.55m clearance across the doorways (including the thickness of the doors) for the movement of a 1,100 litre bin and a clearance of 1.20m for the movement of a 240 litre bin.
- Where there are separate storage areas for residual waste and recycling, the recycling store should be the easiest to access (e.g. closest, least restricted access etc.).
- If containers are to be located in the open then ideally this area will include a fence or wall on at least three sides.
- If containers are to be located in a shed or cupboard then adequate ventilation must be provided together with electric lighting controlled by a local switch.
- Containers should be located away from windows and ventilators, to avoid any nuisance odours entering the premises.
- All locks must be a standard ‘Fire Brigade’ pattern to allow access for the fire brigade.

- There must be space available to wash down container areas at intervals and a local hose point should be provided with suitable drainage.

3.19 With respect to the collection of waste, the following guidance is provided:

- It should not be assumed that collection crews are able to carry keys, codes or electronic fobs during the collection. However, arrangements can be made for this when necessary, subject to approval from LBM Waste Operations Team. This must be discussed prior to the submission of plans.

- Containers must not be presented on or moved across a slope that exceeds 1.12 (in line with Part H of the Building Regulations 2002).

- Surfaces that containers need to move across shall be free from steps or other obstacles. If it is impossible to avoid steps they must incorporate a drop-kerb.

- The collection should not take place in an area that is regularly used by residents.

- Access to the domestic and commercial containers, must be possible from 06.00 hours to 22.00 hours, Monday to Saturday.

- Access should be planned so that it does not restrict the times in which domestic collections can be made due to existing or planned traffic control measures such as controlled parking zones, yellow lines, red routes, bus lanes, etc.

- A suitable crossover must be constructed over any public footway for an entrance way or road. It is essential that the access route for the residual waste vehicle is not blocked; hence there may be a need for yellow/white lines and other measures to control parking.

- Any gates or pinch points on the vehicle route to the residual waste storage area should give a minimum clearance width of 3.5m.

- After the collection is made the collection crews, management staff or cleaning staff should return the containers to storage. There should be clear responsibility for who carries out the task.

Other Considerations

British Standard 5906:2005

3.20 The Standard provides a code of practice for the storage, collection, segregation for recycling and recovery, and on-site treatment of waste. It applies to new buildings, refurbishments and conversions of residential and non-residential buildings. The Standard also presents typical weekly waste airings and subsequent storage requirements for a variety of building types, as shown below:

Table 3.1 Waste volume calculations for relevant non-domestic uses proposed for the Site

Building Type	Equation for weekly waste arisings (litres)
Industrial	Volume per m^2 of floor area [5 l] x floor area

4. OPERATIONAL WASTE MANAGEMENT

4.1 The operational waste management strategy for the Proposed Development has been assessed using the waste hierarchy methodology. This approach is consistent with that required by the Council, requiring new development to demonstrate how the scheme addresses waste separation, storage and collection.

4.2 For the Proposed Development, it is intended that a strategy utilising traditional wheeled bins will be adopted. The adoption of this waste management strategy will aid in maximising the area of landscaped open space provided as part of the Proposed Development, whilst also maximising pedestrian and cycle permeability through the Site.

4.3 It should be noted that the use of bin chutes for the collection of residential waste is not considered appropriate for the Proposed Development. The use of this type of system would require on-site management to ensure correct operation and management, in particular the need for management team members to rotate bins within the central store areas to ensure they do not become overfilled. This, coupled with the potential for the systems to become blocked with waste and resulting repairs, could incur significant costs that would be passed on to future residents. These costs are considered likely comparable to, if not in exceedance of, the costs associated with the proposed waste management strategy. Blockages or failures of the chute systems would also have significant impacts on future residents in that there would be no alternative for the disposal of their waste. Furthermore, the incorporation of bin chute systems within the Proposed Development would not aid in reducing the number of bins or associated space required within communal waste stores, nor would it reduce the number of waste collections required to serve the development. In fact, there is potential that additional space would be required to incorporate a system of this type, as it would need to be integrated within the corridors and internal structures at every level, with elements of the system also needing to be accommodated within the central waste stores. Finally, with the potential for chutes to become conduits for the spread of fire and smoke, the integration of a system of this type within the Proposed Development has the potential to pose a fire risk.

4.4 The waste management strategy for the Proposed Development is outlined below, with residential and non-domestic uses addressed separately.

Residential Operational Waste Management Strategy

4.5 In order to facilitate easy sorting of waste streams for residents, each dwelling will be fitted with a three-compartment waste bin, with each compartment corresponding to the relevant waste stream to be collected by the Council. This will maximise the potential for residents to correctly sort waste

within their home. Guidance for waste stream sorting and collection will be provided in the home user manual.

4.6 The anticipated arisings from the residential component of the Proposed Development are shown in the table below, based on the Council's waste capacity guidelines detailed in Section 3.

Table 4.1 Domestic weekly waste arisings

Block	Number of homes	Weekly arisings (litres)		
		Refuse	Dry recyclables	Compostable (without garden waste)
A	135	16,200	16,200	1,080
B	77	9,240	9,240	616
C	28	3,360	3,360	224
D	46	5,520	5,520	368
E	139	16,680	16,680	1,112
F	154	18,480	18,480	1,232
Total	**579**	**69,480**	**69,480**	**4,632**

4.7 When internal bins are full, residents will transfer their waste to a dedicated storage area, located within the curtilage of their block on the ground floor. In accordance with the Council's waste collection requirements, waste storage bins are defined by the waste stream as follows:

- Refuse: 1,100 litre Eurobins
- Dry recyclables: 1,100 litre Eurobins
- Compostable (without garden waste): 240 litre wheeled bins

4.8 Table 4.2 below details the dimensions of the bin type proposed for use in the residential element of the scheme.

Table 4.2 Domestic waste storage dimensions

	1,100 litre Eurobin	240 litre wheeled bin
Height (mm)	1,475	1,100
Width (mm)	1,250	580
Depth (mm)	980	740

4.9 The table below shows the number of Eurobins required in each location, and the associated minimum area required for the bin store, excluding circulation space. The below assumes both residual and recycling waste streams will be collected by the Council on a weekly basis.

Table 4.3 Domestic waste storage requirements

Location	Storing refuse for blocks	No. of dwellings	No. of 1,100 litre residual Eurobins	No. of 1,100 litre recycling Eurobins	No. of 240 litre wheeled bins	Min. area of store (m²; excluding circulation space)
Core A2	A1, A2	72	8	8	3	27.26
Core A4	A3, A4	63	7	7	3	24.12
Block B1 and B2 (Central Waste Store)	B1, B2, C, D	151	16	16	6	54.51
Block C	C	28	3	3	1	10.13
Block D	D	46	5	5	2	17.13
Block E	E1, E2, E3	139	14	14	5	47.51
Core F1	F1	62	7	7	3	24.12
Block F2 and F3	F2, F3	92	10	10	4	34.25

4.10 Both the proposed number of waste containers to be provided, and the frequency of waste collections by the Council, have been confirmed through correspondence with London Borough of Merton's Waste Team.

4.11 Locations of the bin storage areas, where all bins will be stored, are shown in Appendix A2. As demonstrated in Table 4.3 above, a total of eight waste storage locations will be provided, with weekly waste arisings to be collected by the Council's waste operatives from six of these locations on a weekly basis, accounting for a weekly transfer of waste from C and D to the waste storage area provided within Blocks B1 and B2 (Central Waste Store) by the estate management team. It should be noted that the number of waste containers located within the refuse store in Blocks B1 and B2 (Central Waste Store) is equal to the total number of waste containers to be provided for Blocks B, C and D, as the waste containers located within Blocks C and D will be transferred to the Central Waste Store once per week to enable the collection of the waste by the Council.

4.12 As required by the Council, the bin storage areas are within 30m walking distance of the front door of the blocks. Collection vehicles will have clear access to any bin. For the majority of the proposed waste storage areas, waste operatives will not be required to manoeuvre the bins more than 10m from the external door of the storage areas to the refuse collection vehicle. This is demonstrated in Appendix A3. As noted above, in order to ensure the Council's waste operatives are not required to manoeuvre Eurobins in excess of 10m, it is intended that waste collected in Blocks C and D will be transferred to a waste storage area within Block B on a weekly basis by the estate management team where it will be collected by the Council's waste operatives on a weekly basis.

4.13 The exception to the above is the bin storage area associated with Block F2, which will have a drag distance of more than 10m. It is noted, that whilst the drag distance to the closest designated loading bay is in excess of 10m, bins may still be safely dragged from the store within Block F2 to the bay. Alternatively, the site facilities management team may transfer the bins to an external storage point, shown in the figure below, as required on collection days. It should be noted that this potential area is located outside of the area that is required for parking, and would not impact on the space required for the refuse vehicle to occupy the designated loading bay.

Figure 4.1 Potential location of external bin storage area for Block F2

4.14 The turning circle for the vehicle is quoted as 18.0 metres and in-roads are able to accommodate this. The area where the vehicle will be stationed for collections will be appropriately surfaced to withstand the weight of the collection vehicle. Details of the collection vehicle are provided in Appendix A4 alongside diagrams of the swept path analysis undertaken.

4.15 Bulky waste will be accommodated within the dedicated bulky waste storage areas on the ground floor. These spaces are to be split out by core, and co-located with the waste storage areas. The locations of the bulky waste storage areas are shown in the drawings provided in Appendix A2, and the areas to be provided for each core are summarised below.

Table 4.4 Bulky waste storage provision

Block	Number of dwellings	Min. area of bulky waste store (m^2)
A	135	27.00
B	77	15.40
C	28	5.60

Block	Number of dwellings	Min. area of bulky waste store (m^2)
D	46	9.20
E	139	27.80
F	154	30.80

4.16 It is expected that, through the provision of spaces for the dedicated storage of bulky waste items, the potential for the fly tipping of waste within the proposed development will be mitigated. The provision of bulky waste storage areas will enable the storage of large items, such as tables and chairs, prior to their collection for disposal by the Council.

Non-Domestic Operational Waste Management Strategy

4.17 Approximately 287 sqm of flexible commercial/community use is to be delivered as part of the Proposed Development. Based on the information provided in BS 5906:2005 and by Rolfe Judd Architecture, the waste arisings from the non-residential elements are provided in the table below. Full details of the calculations are provided in Appendix A5.

Table 4.5 Non-domestic weekly waste arising

Location	Use	GIA (m^2)	Type	Weekly waste volume (litres)	Proportion of waste stream	
					Residual	Recycling
Block A3	Flexible Commercial / Community Use	196	Industrial*	981	50%	50%
Block A3	Flexible Commercial / Community Use	91	Industrial*	456	50%	50%

* It is noted that no traditional industrial spaces will be provided as part of the development, but that flexible commercial / community spaces will be delivered. The volumes of waste noted above have been calculated in line with those presented in Table 3.1 above, where industrial uses are considered to most appropriately represent the flexible uses to be brought forward as part of the development.

4.18 It should be noted that, whilst the nature and end users of the flexible spaces to be provided as part of the proposed development have not yet been confirmed, the waste arisings are expected to include refuse and recycling waste. The strategy outlined here will ensure that the waste arisings will be stored in bins proportionate to the volume of waste produced, and will be applicable to any use falling with the flexible commercial/community uses class that my come forward. The proposed mixture of 1,100 litre Eurobins and 240 litre wheeled bins to be provided as part of the non-domestic

waste strategy will ensure all potential uses within these spaces will be catered for with respect to operational waste management.

4.19 The bins will be located within the curtilage of the flexible community and flexible commercial spaces and will be accessible to waste collection operatives. 1,100 litre Eurobins and 240 litre wheeled bins will be provided for the storage of waste arising from both the flexible community and flexible commercial spaces. The dimensions of these bins are provided below:

Table 4.6 Non-domestic waste storage dimensions

	1,100 litre Eurobin	240 litre wheeled bin
Height (mm)	1,370	1,100
Width (mm)	1,280	580
Depth (mm)	980	740

4.20 The resulting non-domestic waste storage requirements are provided below. For the purposes of this waste management strategy, a weekly collection rate has been assumed.

Table 4.7 Non-domestic waste storage requirements

Location	Uses Served	Number of 1,100 litre Eurobins		Number of 240 litre wheeled bins		Min. area of store (m^2)
		Residual	Recycling	Residual	Recycling	
Block A3	Flexible Commercial / Community Space	1	1	-	-	3.97
Block A3	Flexible Commercial / Community Space	-	-	1	1	1.83

4.21 It is expected that waste arising from the non-residential uses will be transferred by the tenants of the spaces to the external waste storage area, shown in Figure 4.1 above, with potential routes shown in Appendix 6. To ensure minimal disruption, it is intended that all non-residential refuse collections would be arranged to take place outside of the hours at which domestic refuse collections would be expected.

4.22 In accordance with BS 5906:2005, all waste containers will need to be stored under cover in a specially designed waste storage room, or store. The walls and roofs of this store will be formed of non-combustible, robust, secure and impervious material, and have a fire resistance of one hour when tested in accordance with BS 476-21 – Fire tests on building materials and structures: Part 21

(Ref. 40), whilst the door of the store will be made of steel, or have a fire resistance of 30 minutes when tested in accordance with BS 476-22 – Fire tests on buildings materials and structure: Part 22 (Ref 41).

4.23 Further to these requirements, BS 5906:2005 outlines the measures which have been included in the design of the waste stores. Compliance with these requirements, the most applicable of which are outlined below, will help maintain a compliant waste strategy for the operation of the Proposed Development.

- All containers for waste, including recyclable material, are easily accessible to both the occupier and waste collector;
- Collectors will not have to manoeuvre waste storage containers from the storage areas to the collecting vehicles for a distance of more than 10m (four wheeled bins) or 15m (two wheeled bins);
- Paths between storage areas and collecting vehicles are free from steps, kerbs or inclines with a gradient of more than 1:12, be non-slip and a minimum of 2m wide. They will have foundations and a hardwearing surface that will withstand the loading imposed by wheeled containers;
- Waste stores have been designed and located in such a way as to limit potential noise disturbance to residents;
- Storage areas for waste and recycling will be clearly designated for this use only, by a suitable door or wall sign and, where appropriate, with floor markings;
- Waste storage sites will include areas for instructional signage detailing correct use of the facilities;
- The entrance of the waste storage room will be free from steps and projections;
- Adequate ventilation will be provided, with permanent ventilators giving a total ventilation area of no less than $0.2m^2$;
- Electrical lighting will include sealed bulkhead fittings (housings rated to IP65 in BS EN 60529:1992 (Ref. 43)) for the purpose of cleaning down with hoses and inevitable splashing. Luminaires will be low energy light fittings or low energy lamp bulbs, controlled by proximity detection or a time delay button to prevent lights being left on; and
- Gullies for wash down facilities will be positioned so as not to be in the track of container trolley wheels.

5. SUMMARY

5.1 With reference to the policy requirements, guidance and industry best practice detailed in Section 3, a comprehensive Operational Waste Management Strategy has been defined for the Proposed Development.

5.2 The Proposed Development has been designed with high standards of waste management performance. This strategy describes the consideration that has been given to waste generated by the Proposed Development during its operation, including how it will be sorted, stored and collected, therefore contributing towards the Council's targets for waste minimisation, recycling and reuse. This strategy demonstrates that circular economy principles have been embedded in the design of the Proposed Development with respect to the management of operational waste. The proposed collection of separate waste streams will encourage future residents to prioritise the recycling of materials over their disposal, in line with the waste hierarchy and the principles of circular economy, which aims to minimise the disposal of materials by maintaining their highest value where practicable.

5.3 The strategy has been prepared to demonstrate that tenants and occupiers of the Proposed Development will be provided with convenient and effective waste management systems that will promote high levels of recycling and ease of collection by the Council.

5.4 An Operational Waste Management Strategy utilising traditional wheeled bins is proposed. The Proposed Development is anticipated to produce approximately 143,592 litres of waste from residential uses per week.

5.5 Residential waste storage will consist of separate 1,110 litre Eurobins for refuse and dry recyclables, and 240 litre wheeled bins for compostable waste, in accordance with local authority guidance. Waste stores have been located within the curtilage of the residential blocks at ground level to ensure easy access for both residents and waste collection operatives.

5.6 The Proposed Development will include commercial space in the form of flexible commercial/community space. These spaces are anticipated to produce approximately 1,437 litres of refuse, recycling and food waste per week. Waste storage for these commercial spaces will consist of either 1,100 litre Eurobins or 240 litre wheeled bins to be collected by a contractual arrangement. The waste storage areas will be located within the curtilage of the buildings for ease of use and to ensure accessibility for commercial waste collection operatives.

5.7 This Strategy therefore demonstrates that the Proposed Development has also been designed to be compliant with all relevant waste management policy, and will manage and dispose of waste in a sustainable manner.

A1. SITE PLAN

NOTES

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1 The Contractor must check and confirm all dimensions
2 All discrepancies must be reported and resolved by the Architect before works commence
3 This drawing is not to be scaled
4 All work and materials to be in accordance with current applicable Statutory Legislation and to comply with all relevant Codes of Practice and British Standards

1:750 scale bar for calibration

0 7.5 15 22.5 30 37.5m

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Rev Date

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Drawing
Illustrative Site Plan

Scale	Date	Status
1:750 (A1)	Nov 22	Information

Job Number	Drawing Number	Revision
6374	**Z2_3_90103**	**-**

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A2. GROUND FLOOR PLAN

NOTES

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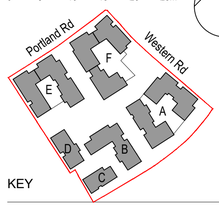

KEY

- Residential Facilities
- Commercial Space
- Ancillary Space
- 1B Private Unit
- 2B Private Unit
- 3B Private Unit
- 1B Affordable Unit
- 2B Affordable Unit
- 3B Affordable Unit
- 1B Intermediate Unit
- 2B Intermediate Unit
- 3B Intermediate Unit

Rev	Date
P05 Issued for Information	14/11/23
P04 Issued for Information	13/11/23
P03 Issued for Information	07/11/23
P02 Issued for information	17/10/23
P01 Issued for information	20/09/23

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Drawing
General Arrangement
Proposed Ground Floor Plan

Scale	Date	Status
1:500 (A1)	Sep 23	Information

Job Number	Drawing Number	Revision
6374	Z4 0 20100	P05

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A3. DRAG DISTANCES FROM PROPOSED WASTE STORES

NOTES

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3 This drawing is not to be scaled
4 All work and materials to be in accordance with current applicable Statutory Legislation and to comply with all relevant Codes of Practice and British Standards

1:500 scale bar for calibration

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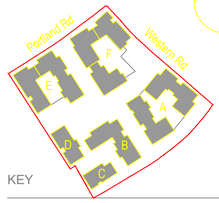

KEY

- Residential Facilities
- Commercial Space
- Ancillary Space
- 1B Private Unit
- 2B Private Unit
- 3B Private Unit
- 1B Affordable Unit
- 2B Affordable Unit
- 3B Affordable Unit
- 1B Intermediate Unit
- 2B Intermediate Unit
- 3B Intermediate Unit
- Distance from refuse storage area
- Area designated for servicing movements and servicing loading bay

Rev	Date
P05 Issued for Information	14/11/23
P04 Issued for Information	13/11/23
P03 Issued for Information	07/11/23
P02 Issued for information	17/10/23
P01 Issued for information	20/09/23

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Drawing
General Arrangement
Proposed Ground Floor Plan

Scale	Date	Status
1:500 (A1)	Sep 23	Information

Job Number	Drawing Number	Revision
6374	Z4 0 20100	P05

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A4. REFUSE COLLECTION VEHICLE SPECIFICATIONS

Sufficient room should be allowed to manoeuvre and load a vehicle of the following dimensions:

- Length = 11 metres
- Width = 2.5 metres
- Height = 3.5 metres
- Turning circle = 18.0 metres

A fully laden collection vehicle will weigh approximately 26 tonnes. The access road therefore must have a road surface that is able to hold a vehicle of this size.

Overhead service cables, pipes, archways and other potential obstacles must be at least 7 metres from ground level.

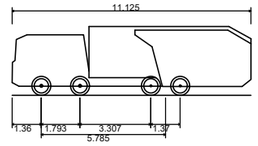
REFUSE VEHICLE ENTERING SET DOWN AREA

REFUSE VEHICLE EXITING SET DOWN AREA

NOTES:

1. THIS DRAWING IS INDICATIVE AND SUBJECT TO DISCUSSIONS WITH LOCAL & NATIONAL HIGHWAY AUTHORITIES. THIS DESIGN IS ALSO SUBJECT TO CONFIRMATION OF LAND OWNERSHIP, TOPOGRAPHY, LOCATION OF STATUTORY SERVICES, DETAILED DESIGN AND TRAFFIC MODELLING.
2. THIS DRAWING IS BASED UPON DRAWING NUMBER T20100 SUPPLIED BY ROLFE JUDD GROUP AND ICENI PROJECTS LTD. SHALL NOT BE LIABLE FOR ANY INACCURACIES OR DEFICIENCIES.

VEHICLE PROFILE:



Phoenix 2-25W (with Volvo FM12 chassis) w/ Wing Mirrors

Overall Length	11.125m
Overall Width	2.530m
Overall Body Height	3.205m
Min Body Ground Clearance	0.410m
Track Width	2.500m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	9.250m

E	06.06.2023	REVISED LAYOUT	AP	SP	SP
D	11.11.2022	REVISED LAYOUT	AP	SP	SP
C	10.11.2022	REVISED LAYOUT	AP	SP	SP
B	08.11.2022	REVISED LAYOUT	AP	NM	SP
A	2022.10.20	REVISED VEHICLE TRACKING	AP	SP	SP

ICENI PROJECTS LIMITED
DA VINCI HOUSE
44 SAFFRON HILL
LONDON
EC1N 8FH

T 020 3640 8508
mail@iceniprojects.com

CLIENT

ST WILLIAM

PROJECT

MITCHAM GAS WORKS

TITLE

SITE LAYOUT REVIEW

(REFUSE VEHICLE)

DRAWN BY	CHECKED BY	APPROVED BY
AP	SP 19.10.2022	SP 19.10.2022

SCALE @ A3	DATE	
1 : 250	19.10.2022	
PROJECT NO.	**DRAWING NO.**	**REV.**
21-T078	25.5	E

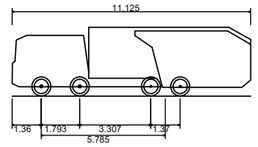
Iceni Projects accept no responsibility for any unauthorised amendments to this drawing. Only figured dimensions are to be worked to.

REFUSE VEHICLE ENTERING PROPOSED TURNING AREA

REFUSE VEHICLE EXITING PROPOSED TURNING AREA

NOTES:
1. THIS DRAWING IS INDICATIVE AND SUBJECT TO DISCUSSIONS WITH LOCAL & NATIONAL HIGHWAY AUTHORITIES. THIS DESIGN IS ALSO SUBJECT TO CONFIRMATION OF LAND OWNERSHIP, TOPOGRAPHY, LOCATION OF STATUTORY SERVICES, DETAILED DESIGN AND TRAFFIC MODELLING.
2. THIS DRAWING IS BASED UPON DRAWING NUMBER Z2_3_SK074_GROUND FLOOR SUPPLIED BY BERKERLEY GROUP AND ICENI PROJECTS LTD. SHALL NOT BE LIABLE FOR ANY INACCURACIES OR DEFICIENCIES.

VEHICLE PROFILE:



Phoenix 2-25W (with Volvo FM12 chassis) w/ Wing Mirrors

Overall Length	11.125m
Overall Width	2.530m
Overall Body Height	3.205m
Min Body Ground Clearance	0.410m
Track Width	2.500m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	9.250m

D	11.11.2022	REVISED LAYOUT	AP	SP	SP
C	10.11.2022	REVISED LAYOUT	AP	SP	SP
B	08.11.2022	REVISED LAYOUT	AP	NM	SP
A	2022.10.20	REVISED VEHICLE TRACKING	AP	SP	SP

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CLIENT

ST WILLIAM

PROJECT

MITCHAM GAS WORKS

TITLE

SITE LAYOUT REVIEW

(REFUSE VEHICLE)

DRAWN BY	CHECKED BY	APPROVED BY
AP	SP 19.10.2022	SP 19.10.2022

SCALE @ A3	DATE	
1 : 500	19.10.2022	
PROJECT NO.	DRAWING NO.	REV.
21-T078	25.11	D

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A5. NON-DOMESTIC WASTE CALCULATIONS

Location	Use	Area (GIA; sqm)	Class	BS5906 metric	Equation	Volume (l)	Residual proportion	Recycling proportion	Residual 1,100 litre Eurobins	Recycling 1,100 litre Eurobins	Residual 240 litre wheeled bins	Recycling 240 litre wheeled bins	Footprint (m^2)
Block A3	Flexible Commercial / Community Space	196	Industrial*	N/A	Volume per m^2 floor area [5 l] x floor area	981	50%	50%	1	1			3.97
Block A4	Flexible Commercial / Community Space	91	Industrial*	N/A	Volume per m^2 floor area [5 l] x floor area	456	50%	20%			1	1	1.83

* It is noted that no traditional industrial spaces will be provided as part of the development, but that flexible commercial / community spaces will be delivered. The volumes of waste noted above have been calculated in line with those presented in Table 3.1 above, where industrial uses are considered to most appropriately represent the flexible uses to be brought forward as part of the development.

A6. INDICATIVE ROUTES TO WASTE COLLECTION POINT

NOTES

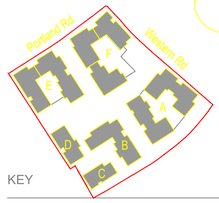
Copyright Rolfe Judd Ltd

1 The Contractor must check and confirm all dimensions
2 All discrepancies must be reported and resolved by the Architect before works commence
3 This drawing is not to be scaled
4 All work and materials to be in accordance with current applicable Statutory Legislation and to comply with all relevant Codes of Practice and British Standards

1:500 scale bar for calibration

0 5 10 15 20 25m

N



KEY

- Residential Facilities
- Commercial Space
- Ancillary Space
- 1B Private Unit
- 2B Private Unit
- 3B Private Unit
- 1B Affordable Unit
- 2B Affordable Unit
- 3B Affordable Unit
- 1B Intermediate Unit
- 2B Intermediate Unit
- 3B Intermediate Unit
- Indicative route to refuse collection point
- Area designated for servicing movements and servicing loading bay

Rev	Date
P05 Issued for Information	14/11/23
P04 Issued for Information	13/11/23
P03 Issued for Information	07/11/23
P02 Issued for information	17/10/23
P01 Issued for information	20/09/23

ROLFE JUDD / ARCHITECTURE
OLD CHURCH COURT, CLAYLANDS ROAD, LONDON SW8 1NZ
/ T 020 7556 1500 / www.rolfe-judd.co.uk

Client
St. William

Project
Mitcham Gas Works
CR4 3ED

Drawing
General Arrangement
Proposed Ground Floor Plan

Scale	Date	Status
1:500 (A1)	Sep 23	Information

Job Number	Drawing Number	Revision
6374	Z4 0 20100	P05

G:\6374\Z_Design\Scheme 4\General\Z4\20\Z4_0_20100

A7. GENERAL NOTES

A7.1 The report is based on information available at the time of the writing and discussions with the client during any project meetings. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by Iceni Projects Ltd for inaccuracies in the data supplied by any other party.

A7.2 The review of planning policy and other requirements does not constitute a detailed review. Its purpose is as a guide to provide the context for the development and to determine the likely requirements of the Local Authority.

A7.3 No site visits have been carried out, unless otherwise specified.

A7.4 This report is prepared and written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and [redacted] in guidance may necessitate a re-interpretation of the report in whole or in part after its original submission.

A7.5 The copyright in the written materials shall remain the property of Iceni Projects Ltd but with a royalty-free perpetual licence to the client deemed to be granted on payment in full to Iceni Projects Ltd by the client of the outstanding amounts.

A7.6 The report is provided for sole use by the Client and is confidential to them and their professional advisors. No responsibility whatsoever for the contents of the report will be accepted to any person other than the client, unless otherwise agreed.

A7.7 These terms apply in addition to the Iceni Projects Ltd "Standard Terms of Business" (or in addition to another written contract which may be in place instead thereof) unless specifically agreed in writing. (In the event of a conflict between these terms and the said Standard Terms of Business the said Standard Terms of Business shall prevail). In the absence of such a written contract the Standard Terms of Business will apply.

Appendix B
Site Waste Management Plan

Project Waste Management Plan

v5 - December 2015

Introduction
The Berkeley Group and its subsidiary companies are committed to using a Project Waste Management Plan (PWMP) on each development site, regardless of value or locality. This is deemed good practice following Government's decision to revoke the legislative requirement for Site Waste Management Plans in December 2013. This site-specific PWMP outlines our procedures and commitments to: - Minimise waste production through our technical, procurement and construction decision-making processes - Manage waste efficiently on site, including the segregation of waste streams where possible - Divert waste from landfill, through either re-use or recycling We will take all reasonable steps to ensure that all waste from the site is dealt with in accordance with the waste duty of care in section 34 of the Environmental Protection Act 1990 and the Environmental Protection (Duty of Care) Regulations 1999. All waste leaving the development site will be recorded in a separate 'Waste Data Tool'. The Waste Data Tool records the identity of the waste carrier and their registration number, a written description of the waste, the name of the disposal site and a record of the permit/exemption for the disposal site. Updates to the Waste Data Tool will occur at least monthly to ensure the regular monitoring, measuring and reporting of non-hazardous and hazardous wastes leaving site. The Waste Data Tool forms part of this Project Waste Management Plan and should be reviewed in conjunction with this document.

Project Details	
Name of Project	Mitcham Gasworks
Project Address	Western Road, Mitcham, CR4 3FL
Project Description	579 units. 14 new build residential apartment blocks. Former gasworks site in Mitcham with one decomissioned holder which has been partially back filled.
Project Build Value (£)	TBC
Project Start Date (*live on site*)	TBC
Project Waste Management Plan Drafted By (*name*)	ST
Project Waste Management Plan Drafted On (*date*)	09/01/2024

Project Breakdown		
BRE Project Type	Residential	
Building Type	**Internal Floor Area (*square metres*)**	**Predominant Build Type**
Houses		
Apartments	38,048	RC Frame
Commercial	287	RC Frame
Student Accommodation		
Extra Care Accommodation		
Other		
Total Internal Floor Area of Structure(s) (*square metres*)	38,335	

Project Team	
Project Manager	TBC
Technical Manager	TBC
Commercial Manager	TBC
Document Controller/Secretary (*if applicable*)	TBC
Person Responsible for Implementing the Project Waste Management Plan (*name*)	TBC
Person Responsible for Implementing the Project Waste Management Plan (*job title*)	TBC

Revision Record	
Date of Revision	**Purpose of Revision**
09/01/2024	Draft issue

Waste Minimisation and Management	
If there are existing buildings and/or structures to be demolished on the site, has a pre-demolition audit been undertaken?	N/a - no existing buildings and/or structures on the development site
Please provide brief details of the outcomes of the pre-demolition audit	No permanent structure. Telecoms mast temporary structure is situated on site and will be demolished once the equipment is operational elsewhere
Please outline details of the measures taken during the planning, design, procurement and construction stages to minimise and manage the production of non-hazardous wastes on this project	Clean Inert material in gasholder tanks will be preferentially excavated as part of initial material management exercise. Material from the site will be used to re-balance the gasholders up to formation level for the buildings and landscaping.
Specify three waste groups which will be / have been minimised at the design stage	**Outline waste minimisation actions taken at the design stage for the selected waste group**
Soils (Uncontaminated)	Reused to infill gasholder tanks to formation level
Soils (Contaminated)	Only soil that needs to be is being excavated to piling platform level
Bricks	Standard brick dimensions and setting out will minimise excess waste
Please outline details of the measures taken during the planning, design, procurement and construction stages to minimise and manage the production of hazardous wastes on this project	Soil that is excavated will be treated on site so it can be reused and not removed from site where possible.

Waste Stream Predictions and Management								
Waste Stream	**BRE Waste Stream Benchmarks (*m3*) (*indicative figures only*)**	**Berkeley Group Waste Stream Benchmarks (*m3*) (*indicative figures only*)**	**Predicted Amount of Waste Generated (*m3*)**	**Facilities Required**	**Projected End Destination**	**Cost of Waste Removal and Recovery / Disposal *(£/m3)***	**Predicted Waste Cost *(£)***	**Notes**
EXAMPLE: Plasterboard	*70*	*45*	*50*	*Skip: 7 cubic yard*	*Recycling Facility*	*£36*	*£1,800*	*All plasterboard to be segregated on-site for recycling*
Construction								
Asphalt and Tar	53.323985	92			Recycling facility			
Bricks	1036.463395	231			Reuse on-site			
Canteen / Welfare / Office Waste	211.034175	61			Composting facility			
Cardboard and Paper Packaging	299.2621775	228			Recycling facility			
Ceramics and Tiles	94.22743	56			Recycling facility			
Concrete (blocks, rubble, paving slabs, pipes etc)	1246.539195	763			Reuse on-site			
Electrical and Electronic Equipment	14.95065	1			Recycling facility			
Floor Coverings (carpets, vinyl etc)	20.585895	45			Recycling facility			
Furniture	4.561865	4			Recycling facility			
Glass	No Benchmark	8			Recycling facility			
Hazardous Materials (mastic tubes, spray cans, used spill kit materials etc)	50.06551	393			Hazardous waste treatment facility			
Insulation	214.52266	368			Recycling facility			
Liquids (non hazardous only, e.g. canteen oils)	16.905735	1			Incineration plant (with energy recovery)			
Metals	118.953505	341			Recycling facility			
Miscellaneous	1760.764885	1202			Recycling facility			
Oils (fuels and oily waters only)	0.728365	1			Incineration plant (with energy recovery)			
Other Plaster and Gypsum-Based Material	No Benchmark	47			Recycling facility			
Other Plastics (corex etc)	251.93762	237			Recycling facility			
Paint Tins / Containers	No Benchmark	1			Hazardous waste treatment facility			
Paper	No Benchmark	135			Recycling facility			
Plasterboard	465.348565	887			Recycling facility			
Plastic Packaging	299.2621775	501			Recycling facility			
Soils (Contaminated)	No Benchmark	12			Hazardous waste treatment facility			
Soils (Uncontaminated)	No Benchmark	2999			Reuse off-site			
Timber	951.129685	1344			Recycling facility			
Toilet Wastes (e.g. sewage effluent tank and chemical toilet wastes etc)	No Benchmark	No Benchmark			Sewage treatment works			
Demolition								
Excavation								
Soils (Uncontaminated)					Reuse on-site			reused on site to fillgasholder voids
Soils (Contaminated)					Hazardous waste treatment facility			Removed from site in circa 20yd wagon for safe treatment if not treated and reused on site

Predicted total waste volume	0	**Predicted overall reuse/recycling rate (%)**	#DIV/0!	**Predicted overall cost *(£)***	£0.00
Predicted waste volume (*excluding demolition and excavation waste*)	0	**Predicted reuse/recycling rate (%) (*excluding demolition and excavation waste*)**	#DIV/0!	**Predicted cost *(£)* (*excluding demolition and excavation waste)***	£0.00

Waste Targets		
Target Name	**Target**	**Explanation**
Berkeley Group Waste Target	**Reuse or recycle over 95% of waste**	The Berkeley Group target is to divert at least 95% of construction, demolition and excavation waste (by volume) from landfill through reuse or recycling.
BRE Waste Benchmark (m3/100m2) for the project type *Based on December 2015 data*	**Average Volume of Waste (excluding demolition and excavation waste) per 100m2 of floor area: 18.55 m3**	BRE Waste Benchmarks are derived from completed projects that use the BRE SMARTWaste Plan. The benchmarks are based on completed *new build* construction projects. The benchmarks are based on construction waste only and do not include demolition, excavation or groundworks waste. The BRE Waste Benchmarks are the average m3 of waste produced per 100m2 floor area under construction. The Target Total Project Waste Volume is calculated by multiplying the BRE Waste Benchmark by the Total Internal Floor Area of Structure(s).
	Total Project Waste Volume (excluding demolition and excavation waste): 7111.1425 m3	
BRE Waste Benchmark (m3/100m2) for the residential elements of the mixed use project *Based on December 2015 data*	**N/a - project type is not mixed use**	
	N/a - project type is not mixed use	
BREEAM Target Credits	**N/a - no elements of the development are required to be certified to BREEAM**	To achieve BREEAM credits under section 'Wst 01', non-hazardous construction waste (excluding demolition and excavation waste) generated by the construction of the building covered by BREEAM should not be greater than the value outlined.

HODKINSON

Appendix C
Construction Waste Volumes

From: [redacted]
To: [redacted]
Cc: [redacted]
Subject: RE: Mitcham Gasworks WLC & CE
Date: 29 November 2023 09:59:53
Attachments: image004.png
image005.png
image007.png
image010.png
image011.png
image945922.png

Hi [redacted]

I hope you are well.

Apologies for not coming back to you on this earlier.

There will be no [redacted] to the demolition or excavation waste points, however there would be a minor [redacted] to the construction waste volumes, as follows:

Total GIA (sqm)	BRE project type	Tonnes / 100m^2 gross floor area (BRE)	Estimated construction waste (tonnes)
38,048	Residential	15.3	5,821.3
287	Commercial	15.7	45.1
Total	-	-	**5,866.4**

Please let me know if you need anything further.

Kind regards,
[redacted]

[redacted]
Associate, Iceni Futures

[redacted]

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Appendix D
Recycled Content Calculations

REUSED AND RECYCLED CONTENT CALCULATIONS

	Material quantity (kg)	Material intensity (kg/m²)	Recycled content by value
Substructure	31,857,325	533.21	27.56%
Superstructure: Frame	19,109,014	319.84	47.99%
Superstructure: Upper Floors	24,982,619	418.15	40.74%
Superstructure: Roof	5,253,374	87.93	4.3%
Superstructure: External Walls	13,499,389	255.95	3.33%
Superstructure: Windows and External Doors	833,240	14.78	3.75%
Superstructure: Internal Walls and Partitions	2,400,293	40.17	36.87%
Superstructure: Internal Doors	411,605	7.39	0%
Finishes	1,160,249	19.42	10.39%
Fittings, furnishes, and equipment	497,147	8.32	27.16%
External works	8.833,226	147.85	1.26%
Total	**110,884,900**	**1,855.94**	**15.41%**

St William
Designed for life

The draft consultation version of the template has been updated as follows:

Template tab	Details
Pre-app information	Principle 1 expanded to require further details on pre-construction demolition and options explored for retaining existing buildings/structures.
	Removal of Y/N option next to each WLC reduction principle.
Outline and Detailed planning Stage & Post-construction result	Confirmation of operational modelling process used
	Confirmation relating to proportion of material quantities included relating to cost
	Confirmation of third party mechanisms
	Confirmation that the assessment has or can be submitted to the Built Environment Carbon Database
	Updated assessment summary results to align with new WLC benchmarks
	Addition of selection of most comparable WLC benchmark selection
	Addition of details relating to retention of existing structures and buildings
	Updated note/example text for module B assumptions and end of life scenarios in the 'Material Quantity and End of Life Scenarios' table
	Addition of details relating to refrigerants to 'Material Quantity and End of Life Scenarios' table
	Addition of option in assessment table to report A5 emissions as a single number or A5 emissions not related to a building element category
	Removal of assessment 2
	Colour coding to reflect cells that require inputs and cells which are updated automatically
Post-construction result	Addition of confirmation relating to post-construction evidence submission
	Addition of list of product specific EPDs from products installed in the building

Greater London Authority - Whole Life-Cycle Carbon (WLC) Assessment template

HOW TO USE THIS SPREADSHEET

This template should be used by planning applicants to fulfil the requirements of the Mayor's Whole Life-Cycle Carbon (WLC) Assessment policy set out in London Plan Policy SI 2. Before completing and submitting this spreadsheet to the GLA, applicants should read the Whole Life-Cycle Carbon Assessment guidance:
https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance/whole-life-cycle-carbon-assessments-guidance

Applicants are required to submit a WLC assessment to the GLA at the following three stages: pre-application, outline/detailed planning submission and post-construction. Separate tabs are provided in this spreadsheet for each stage. An outline of the information required at each stage and how to submit it is provided below.

1. Pre-application stage

At pre-application stage, applicants are required to complete the pre-application information tab of this template to confirm various details about the site and to provide details of the WLC principles which are informing the development of the site. This should be submitted to the GLA along with all other pre-application material.

2. Outline/detailed planning submission stage

At this stage, applicants are required to complete the outline or detailed planning stage tab of this template (whichever is relevant) and submit it to the GLA along with their planning application. This stage of the process requires a baseline WLC assessment against each life-cycle module to be undertaken.

3. Post-construction stage

At the final stage of the WLC assessment process, applicants should complete the post-construction result tab of this template and submit it to the GLA prior to occupation of the development. This will require an update of the information provided at planning submission stage and for the actual WLC carbon emission figures to be reported using actual material quantities and site emissions during construction. Information should be submitted to:
ZeroCarbonPlanning@london.gov.uk

QUERIES

Any queries or feedback on this template should be submitted to:
ZeroCarbonPlanning@london.gov.uk

Project details	
Project name	
Planning application reference number (if applicable)	
Use Type	
Brief description of the project	
GIA (m^2)	
Authors (organisation or individuals)	
Date of assessment	

	WLC reduction principles	Key benefits	Provide examples of how reduction principle has been used, or give reasons why it cannot be used.	
1	Reuse and retrofit of existing buildings	Significant retention and reuse of structures is carbon efficient and reduces construction costs.	Confirmation that options for retaining existing buildings and structures have been fully explored before considering substantial demolition	[Outline the options that have been considered - plus an explanation of opportunities and limitations, and why demolition outweighs the benefits of retaining existing buildings/structures where applicable]
			Carbon emissions associated with pre-construction demolition ($kgCO_2e$)	[If estimates are not possible, please apply standard assumption of $50kgCO_2e/m^2$ of the existing building/s]
			Estimate of the percentage of the new build development which will be made up of existing elements	[e.g. X% existing facades; Y% existing foundations; Z% superstructures etc.]
2	Use repurposed or recycled materials	Reduces waste and carbon emissions.		
3	Material selection	Appropriate material choices are key to carbon reduction. Ensuring that materials are selected with consideration of the planned life expectancy of the building reduces waste, the need for replacements and the in-use costs.		
4	Minimise operational energy use	A 'fabric first' approach should be prioritised to minimise energy demand and reduce carbon and in-use costs.		
5	Minimise the carbon emissions associated with operational water use	Choice of materials and durability of systems, which help to avoid leakage and subsequent building damage, contribute to reducing the carbon emissions of water use.		
6	Disassembly and reuse	Designing for future disassembly ensures that products do not become future waste and that they maintain their environmental and economic value.		
7	Building shape and form	Compact efficient shapes help minimise both operational and embodied carbon emissions from repair and replacement for a given floor area. This leads to a more efficient building overall resulting in lower construction and in use costs.		
8	Regenerative design	Removing carbon emissions from the atmosphere through materials and systems absorbing it makes a direct contribution to carbon reduction.		

9	Designing for durability and flexibility	Durability means that repair and replacement is reduced which in turn helps reduce life-time building costs. A building designed for flexibility can respond with minimum environmental impact to future [redacted] requirements and a [redacted] climate, thus avoiding obsolescence which also underwrites future building value.	
10	Optimisation of the relationship between operational and embodied carbon	Optimising the relationship between operational and embodied carbon contributes directly to resource efficiency and overall cost reduction.	
11	Building life expectancy	Defining building life expectancy gives guidance to project teams as to the most efficient choices for materials and products. This aids overall resource efficiency, including cost efficiency and helps future proof asset value.	
12	Local sourcing	Sourcing local materials reduces transport distances and supply chain lengths and has associated local social and economic benefits.	
13	Minimising waste	Waste represents unnecessary and avoidable carbon emissions. Buildings should be designed to minimise construction waste, and to ease repair and replacement with minimum waste, which helps reduce initial and in-use costs.	
14	Efficient construction	Efficient construction methods (e.g. modular systems, precision manufacturing and modern methods of construction) can contribute to better build quality, reduce construction phase waste and reduce the need for repairs in the post completion and the defects period (snagging).	
15	Lightweight construction	Lightweight construction uses less material which reduces the carbon emissions of the building as there is less material to source, fabricate and deliver to site.	
16	Circular economy	The circular economy principle focusses on a more efficient use of materials which in turn leads to carbon and financial efficiencies.	

Project details	
Project name	
Planning application reference number (if applicable)	
Use Class	
Brief description of the project	
GIA (m²)	

Key	
	Data automatically calculated - no direct input required
	Cells that require information / data inputting
	N/A

Assessment details	
Authors (organisation or individuals)	
Date of assessment	
Operational modelling methodology for Module B6 results	e.g. SAP or TM54
Reference study period (if not 60 years)	[This cell should only be filled in if the reference study period, i.e. the assumed building life expectancy, exceeds or is less than 60 years. Applicants should state the reference study period in this cell. While the assessment should still be done to 60 years, applicants may, if they choose to, submit an additional assessment of the modules B, C and D for the actual reference study period by copying and pasting an additional 'GWP potential for all life-cycle modules' table, see below].
Software tool used	
Type of EPDs and carbon database used	[If using more than one database please list all]
Please confirm if 95% of the cost allocated to each building element category has been accounted for in the assessment?	[Yes, or please explain any omissions]
Explanation of the third-party mechanisms which have been adopted to quality assure this submission	
Please confirm whether you have submitted this assessment to the Built Environment Carbon Database (https://www.becd.co.uk/) or if you give permission for the GLA to do this on your behalf by checking one of the following boxes	I have submitted this assessment to the BECD ☐
	I give permission for the GLA to submit this assessment to the BECD on my behalf ☐

Estimated WLC emissions
N.B. This forms the WLC baseline for the development. The green cells will automatically populate from the tables below

	Module A1-A5 (excluding sequestered carbon)	Modules B-C (excl B6 & B7)	Modules A-C (excluding B6-B7; including sequestered carbon)	Module B1-B5	Module B6-B7	Module C1-C4	Module D
TOTAL kg CO_2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	#VALUE!	0 kg CO2e	0 kg CO2e
TOTAL kg CO_2e/m^2 GIA	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#VALUE!	#DIV/0!	#DIV/0!
Please select most appropriate benchmark from drop-down menu	Residential						
WLC Benchmark	*<850*	*<350*	*<1200*				
Aspirational WLC Benchmark	*<500*	*<300*	*<800*				
Comparison with WLC benchmarks (see Appendix 2 of the guidance)	[Explain the reasons for any divergences from WLC benchmarks, including against the WLC aspirational benchmarks]						

Retention of existing buildings and structures	
Confirmation that options for retaining existing buildings and structures have been fully explored before considering substantial demolition	[Outline the options that have been considered - plus an explanation of opportunities and limitations, and why demolition outweighs the benefits of retaining existing buildings/structures where applicable]
Carbon emissions associated with pre-construction demolition ($kgCO_2e$)	[If estimates are not possible, please apply standard assumption of 50$kgCO_2e/m^2$ of the existing building/s]
Estimate of the percentage of the new build development which will be made up of existing elements	[e.g. X% existing facades; Y% existing foundations; Z% superstructures etc.]

	Actions included in WLC assessment results reported	WLC reduction (kg CO_2e/m^2 GIA)
Summary of key actions to reduce whole life-cycle carbon emissions that have informed this assessment, including the WLC reductions	[This list does not need to be exhaustive but should identify the actions with the biggest impacts. Insert more lines if needed]	

	Further potential opportunities	WLC reduction potential (kg CO_2e/m^2 GIA)
Specify further opportunities to reduce the development's whole life-cycle carbon emissions, including the WLC reduction potential	[Insert more lines as needed]	

MATERIAL QUANTITY AND END OF LIFE SCENARIOS		Product and Construction Stage (Module A)		Assumptions made with respect to maintenance, repair and replacement cycles (Module B)	Material 'end of life' scenarios (Module C)	Benefits and loads beyond the system boundary (Module D)	
Building element category		Material type	Material quantity (kg)			Estimated reusable materials (kg)	Estimated recyclable materials (kg)
Note/example		Breakdown of material type in each category [Insert more lines if needed]	65000 kg	For all primary building systems (structure, substructure, envelope, MEP services, internal finishes) including assumed material/product lifespans and annual maintenance/repair %	Declare 'end of life' scenario as per project's Circular Economy Statement, and used in the WLC assessment to produce Module C results	0 kg	25 kg
		e.g. Concrete					
		e.g. Reinforcement	5000 kg			2 kg	8 kg
		e.g. Formwork	250 kg			0 kg	0 kg
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment						
0.2	Major Demolition Works						
0.3	Temporary Support to Adjacent Structures						
0.4	Specialist Ground Works						
1	Substructure						
2.1	Superstructure: Frame						
2.2	Superstructure: Upper Floors						
2.3	Superstructure: Roof						
2.4	Superstructure: Stairs and Ramps						
2.5	Superstructure: External Walls						
2.6	Superstructure: Windows and External Doors						
2.7	Superstructure: Internal Walls and Partitions						
2.8	Superstructure: Internal Doors						
3	Finishes						
4	Fittings, furnishings & equipment (FFE)						
5	Services (MEP)						
6	Prefabricated Buildings and Building Units						
7	Work to Existing Building						
8	External works						

Please add rows where more than 1 material type exists per building element category

Refrigerants	Refrigerant name	Initial quantity/charge (kg)	Assumed annual leakage rate %	Refrigerant GWP ($kgCO_2e/kg$)	End of Life recovery rate %	

a	Refrigerants Type 1 (if applicable) - please see CIBSE TM65 for methodology							Please add rows if required
b	Refrigerants Type 2 (if applicable) - please see CIBSE TM65 for methodology							
c	Refrigerants Type 3 (if applicable) - please see CIBSE TM65 for methodology							
	TOTAL	0 kg				0 kg	0 kg	
	Material intensity (kg/m2 GIA)	#DIV/0!				#DIV/0!	#DIV/0!	

GWP POTENTIAL FOR ALL LIFE-CYCLE MODULES ($kgCO_2e$) (See Note 1 below if you entered a reference study period in cell C12)		**Sequestered (or biogenic) carbon** (negative value) **($kgCO_2e$)**	**Product stage ($kgCO_2e$)**	**Construction process stage ($kgCO_2e$)**		**Use stage ($kgCO_2e$)**							**End of Life (EoL) stage ($kgCO_2e$)**				**TOTAL Modules A-C $kgCO_2e$**	**Benefits and loads beyond the system boundary ($kgCO_2e$)**
			Module A			**Module B**							**Module C**					**Module D**
Building element category			**[A1] to [A3]**	**[A4]**	**[A5]**	**[B1]**	**[B2]**	**[B3]**	**[B4]**	**[B5]**	**[B6]**	**[B7]**	**[C1]**	**[C2]**	**[C3]**	**[C4]**		
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
0.2	Major Demolition Works												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
0.3	Temporary Support to Adjacent Structures												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
0.4	Specialist Ground Works												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
0.5	Temporary Diversion Works												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
1	**Substructure**												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.1	Superstructure: Frame												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.2	Superstructure: Upper Floors												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.3	Superstructure: Roof												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.4	Superstructure: Stairs and Ramps												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.5	Superstructure: External Walls												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.6	Superstructure: Windows and External Doors												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.7	Superstructure: Internal Walls and Partitions												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.8	Superstructure: Internal Doors												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
3	Finishes												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
4	Fittings, furnishings & equipment												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
5	Services (MEP)										Regulated emissions	Unregulated emissions / Operational Water	[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
6	Prefabricated Buildings and Building Units												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
7	Work to Existing Building												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
8	External works												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
Other site construction impacts or overall construction stage [A5] carbon emissions not specific to an individual building element category																	0 kg CO2e	
TOTAL kg CO_2e		**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**#VALUE!**	**Operational Water**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**
TOTAL kg CO_2e/m^2 GIA		**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#VALUE!**	**#VALUE!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**

Project details	
Project name	Mitcham Gasworks
Planning application reference number (if applicable)	
Use Class	C3
Brief description of the project	Erection of new buildings to provide residential accommodation (Class C3) and flexible commercial/community space (Class E and/or Class F2), with associated access, parking and landscaping arrangements, including the demolition of the existing telecommunications mast and re-provision of new telecommunications mast.
GIA (m²)	59746

Key	
	Data automatically calculated - no direct input required
	Cells that require information / data inputting
	N/A

Assessment details	
Authors (organisation or individuals)	Hodkinson Consultancy
Date of assessment	20.11.2023
Operational modelling methodology for Module B6 result	SAP and SBEM
Reference study period (if not 60 years)	60 years
Software tool used	One Click LCA
Types of EPDs and carbon database used	One Click LCA default values
Please confirm if 95% of the cost allocated to each building element category has been accounted for in the assessment*	Yes - The client confirmed that 95% of the cost allocated to each building element category has been included.
Explanation of mechanisms which have been adopted to quality assure the submission	All work completed by a competent individual ([redacted]c) who has undertaken multiple LCAs for GLA compliance. He is suitability competent to undertake the work. His work was checked was [redacted] BSc, MSc, CEnv, MIEMA who was not involved in the project and undertook a detailed QA of the assessment to ensure it was accurate, in line with information received and compliant with the GLA guidance.
Please confirm whether you have submitted this assessment to the Built Environment Carbon Database (https://www.becd.co.uk/) or if you give permission for the GLA to do this on your behalf by checking one of the following boxes	I have submitted this assessment to the BECD ☐
	I give permission for the GLA to submit this assessment to the BECD on my behalf ☑

Estimated WLC emissions
N.B. This forms the WLC baseline for the development. The green cells will automatically populate from the tables below

	Module A1-A5 (excluding sequestered carbon)	Modules B-C (excl B6 & B7)	Modules A-C (excl B6 & B7; including sequestered carbon)	Module B1-B5	Module B6-B7	Module C1-C4	Module D
TOTAL kg CO_2e	33,457,099 kg CO2e	19,613,957 kg CO2e	51,445,429 kg CO2e	17,107,447 kg CO2e	19,722,804 kg CO2e	2,506,510 kg CO2e	-1,549,155 kg CO2e
TOTAL kg CO_2e/m^2 GIA	559.989	328.289	861.069	286.336	330.111	41.953	-193.304
Please select most appropriate benchmark from drop-down menu	Residential						
WLC Benchmark	*<850*	<350	*<1200*				
Aspirational WLC Benchmark	*<500*	*<300*	*<800*				
Comparison with WLC benchmarks (see Appendix 2 of the guidance)	The proposed development is performing better than GLA benchmarks for all modules and is therefore compliant with London Policy SI 2. The results demonstrate that the development has taken account of relevant policy and reduced emissions as far as reasonably possible based on current information available						

Retention of existing buildings and structures	
Confirmation that options for retaining existing buildings and structures have been fully explored before considering substantial demolition	The site was formerly in use as a gasworks by National Grid, with a large gasholder in the northern corner of the site. The gasholder frame was demolished in 2021 under prior approval20/P0703. The existing site contains a telecommunications mast and two pressure reduction stations (PRS). A number of underground gas mains run across the site, with some requiring diversion to facilitate redevelopment.The site is otherwise vacant, with high walls or fences around all boundaries
Carbon emissions associated with pre-construction demolition ($kgCO_2e$)	2,000,000 kg CO2e
Estimate of the percentage of the new build development which will be made up of existing elements	0%

Summary of key actions to reduce whole life-cycle carbon emissions that have informed this assessment, including the WLC reductions	Actions included in WLC assessment results reported	WLC reduction ($kg\ CO_2e/m^2$ GIA)
	All end of life scenarios for concrete and bricks to be reused where possible	2
	90% recycled steel content in floor constructions	13.24
	Ahead of issuing is with relevant project information, the stuctural engineer undertook optimisation workshops to ensure all substructure and framing elements were as low as possible in terms of embodied carbon. When compared to a standard baseline the savings of this optimsation are significant.	68.87
	Use of pre-fab balconies opposed to in situ concrete	9.1

Specify further opportunities to reduce the development's whole life-cycle carbon emissions. including the WLC reduction potential	Further potential opportunities	WLC reduction potential ($kg\ CO_2e/m^2$ GIA)
	Reducing transport procurement to within 50km of the site	1.155
	Use of a brick with 90% recycled content in place of the standard red brick	30.53

MATERIAL QUANTITY AND END OF LIFE SCENARIOS		Product and Construction Stage (Module A)		Assumptions made with respect to maintenance, repair and replacement cycles (Module B)	Material 'end of life' scenarios (Module C)	Benefits and loads beyond the system boundary (Module D)	
Building element category		Material type	Material quantity (kg)			Estimated reusable materials (kg)	Estimated recyclable materials (kg)
Note/example		Breakdown of material type in each category [insert more lines if needed] e.g. Concrete	65000 kg	For all primary building systems (structure, substructure, envelope, MEP services, internal finishes) including assumed material/product lifespans and annual maintenance/repair %	Declare 'end of life' scenario as per project's Circular Economy Statement, and used in the WLC assessment to produce Module C results	0 kg	25 kg
		e.g. Reinforcement	5000 kg			2 kg	8 kg
		e.g. Formwork	250 kg			0 kg	0 kg
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment						
0.2	Major Demolition Works						
0.3	Temporary Support to Adjacent Structures						
0.4	Specialist Ground Works						
1	Substructure	Ready-mix concrete, low-strength, generic, C12/15 (1700/2200 PSI), 0% recycled binders in cement (220 kg/m3 / 13.73 lbs/ft3)	12,418,120 kg	60	Concrete crushed to aggregate (for sub-base layers), Portland Cement 200 kg / m3	0 kg	12,418,120 kg
		Aggregate (crushed gravel), generic, dry bulk density, 1600 kg/m3	1,868,160 kg	60	Backfilling (for inert materials)	1,868,160 kg	0 kg
		Waterproofing membrane, single component, cold applied, from PU, 1.5 mm, 1.98 kg/m2, Sikalastic-625 (Sika)	18,285 kg	60	Plastic-based material incineration	0 kg	0 kg
		Reinforcement steel (rebar), generic, 97% recycled content, A615	674,289 kg	60	Steel recycling	0 kg	674,289 kg
		Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3)	10,361,000 kg	60	Concrete crushed to aggregate (for sub-base layers), Portland Cement 300 kg / m3	0 kg	10,361,000 kg
		EPS Insulation, T: 10-2400 mm, 600 x 1200 mm, 0.031 W/m2K, 16 kg/m3 (EPS-gruppen)	13,603 kg	60	Plastic-based material incineration	0 kg	0 kg
		EPS Insulation, T: 10-2400 mm, 600 x 1200 mm, 0.031 W/m2K, 16 kg/m3 (EPS-gruppen)	27,340 kg	60	Plastic-based material incineration	0 kg	0 kg
		Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3)	4,921,200 kg	60	Concrete crushed to aggregate (for sub-base layers), Portland Cement 300 kg / m3	0 kg	4,921,200 kg
		Plastic vapour control layer, 0.2 mm (Tommen Gram)	1,264 kg	30	Plastic-based material incineration	0 kg	0 kg
		Self levelling mortar, for floors, walls and overhead appl., 3-50 mm, 1400 kg/m3, Pericret (PCI Augsburg)	191,380 kg	60	Cement/mortar use in a backfill	191,380 kg	0 kg
		Reinforcement steel (rebar), generic, 97% recycled content, A615	184,545 kg	60	Steel recycling	0 kg	184,545 kg
2.1	Superstructure: Frame	Reinforcement steel (rebar), generic, 97% recycled content, A615	328,568 kg	60	Steel recycling	0 kg	328,568 kg
		Reinforcement steel (rebar), generic, 97% recycled content, A615	1,072,566 kg	60	Steel recycling	0 kg	1,072,566 kg
		Ready-mix concrete, normal-strength, generic, C40/50 (5800/7300 PSI), 10% (typical) recycled binders in cement (400 kg/m3 / 24.97 lbs/ft3)	4,031,088 kg	60	Concrete crushed to aggregate (for sub-base layers), Portland Cement 400 kg / m3	0 kg	4,031,088 kg
		Ready-mix concrete, normal-strength, generic, C40/50 (5800/7300 PSI), 10% (typical) recycled binders in cement (400 kg/m3 / 24.97 lbs/ft3)	12,930,379 kg	60	Concrete crushed to aggregate (for sub-base layers), Portland Cement 400 kg / m3	0 kg	12,930,379 kg
2.2	Superstructure: Upper Floors	Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3)	19,712,448 kg	60	Concrete crushed to aggregate (for sub-base layers), Portland Cement 300 kg / m3	0 kg	19,712,448 kg
		Prefabricated steel balcony with steel railings, W: 380 cm H: 120 cm D: 140 cm, 561 kg/unit, Steel grade: S235/S275/S355 (CSK Stålindustri AS)	342,771 kg	15	Plastic-based material incineration	0 kg	0 kg
		Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3)	2,811,360 kg	60	Concrete crushed to aggregate (for sub-base layers), Portland Cement 300 kg / m3	0 kg	2,811,360 kg
		Reinforcement steel (rebar), generic, 97% recycled content, A615	985,622 kg	60	Steel recycling	0 kg	985,622 kg
		Reinforcement steel (rebar), generic, 97% recycled content, A615	140,568 kg	60	Steel recycling	0 kg	140,568 kg
2.3	Superstructure: Roof	PU thermal insulation boards with multi-layer aluminium facing, L = 0.023 W/mK, 31 kg/m3	1,817 kg	60	Plastic-based material incineration	0 kg	0 kg
		PU thermal insulation boards with multi-layer aluminium facing, L = 0.023 W/mK, 31 kg/m3	27,258 kg	60	Landfilling (for inert materials)	0 kg	0 kg

Please add rows where more than 1 material type exists per building element category

		Filler fabric N2	290 kg	30	Plastic-based material incineration	0 kg	0 kg
		Bitumen-polymer membrane roofing, 2 layer, fully torched (EN/A)	66,998 kg	60	Concrete crushed to aggregate (for sub-base layers), Portland Cement 400 kg / m3	0 kg	66,998 kg
		Ready-mix concrete, normal-strength, generic, cement (240 kg/m3 / 16 GB bin/lb)	193,446 kg	60	Rebar separated (2 %), concrete to aggregate	0 kg	193,446 kg
		Lightweight concrete block, with expanded clay aggregate, generic, 650 kg/m3 (40 lb/ft3), 190 x 190 x 390 mm; 12 blocks/m², 0.5 m²/block, 0.0975 m³/block (0.0190 0.0190 0.007 m)	228,618 kg	60	Landfilling (for inert materials)	0 kg	228,618 kg
		Hollow core concrete slab, 265 kg/m², HD 320 (Spannbeton), 8 meters/m2, 362 kg/m2	2,297,904 kg	60	Steel recycling	0 kg	2,297,904 kg
		Hollow core concrete slab, 265 kg/m², HD 320 (Spannbeton), 8 meters/m2, 362 kg/m2	2,112,464 kg	60	Rebar separated (2 %), concrete to aggregate	2,112,464 kg	
		Hollow core concrete slab, 265 kg/m², HD 320 (Spannbeton), 8 meters/m2, 362 kg/m2	2,112,464 kg	60	Rebar separated (2 %), concrete to aggregate	0 kg	2,112,464 kg
		Clamp insulation PK, 0.08 kg/m2	469 kg	30	Plastic-based material incineration	0 kg	0 kg
		Insulation, EPS solid form for roofs and walls, L = 0.035 W/mK, 22.7 kg/m3, Styropor®, W/D -035 (N/H)	23,287 kg	30	Plastic-based material incineration	0 kg	0 kg
		Defensive green roof system, Atmos, 23.34 kg/m2, Übersprese (Kiesel)	239,433 kg	60	Plastic-based material incineration	0 kg	0 kg
		Carpet tiles, 5 mm, 3.765 kg/m2, TESSERA STRUKTUR 1 (Cirko Flooring)	7,287 kg	20	Plastic-based material recycling	0 kg	7,287 kg
		Carpet tiles, 5 mm, 3.765 kg/m2, TESSERA STRUKTUR 1 (Cirko Flooring)	7,287 kg	20	Plastic-based material recycling	0 kg	7,287 kg
		Ceramic wall tiles, 7.5 mm, 3000 kg/m2 (Steranit Granit Gamma)	410,568 kg	30	Brick/stone crushed to aggregate (for sub-base layers)	0 kg	410,568 kg
		Timber floor, solid beech, 22 mm, 720 kg/m3, Buche massiv, Parkett 3-Stab, Landhausdiele, Schiffsboden, Massivholzdiele, Buche, Parkett, Massivholz, Buche, Parkett, Massivholz, Buche, Parkett, Massivholz

		Drinking water supply piping network, per m2 GIFA (residential buildings)	15,045 kg	35	Metal-containing product recycling (90 % metal)		0 kg	15,045 kg
		Sewage water drainage piping network, per m2 GIFA (residential buildings)	10,625 kg	35	Metal-containing product recycling (90 % metal)		0 kg	10,625 kg
6	Prefabricated Buildings and Building Units							
7	Work to Existing Building							
8	External works	Wooden bench, 13.5 kg/unit, OVO Bench Collection (Benchmark)	278 kg	12	Wood-containing product incineration (80% wood)		0 kg	0 kg
		Galvanized steel bicycle shelters, 76.7 kg/unit, DONNEE PAR DEFAUT (DED)	49,613 kg	60	Steel recycling		0 kg	49,613 kg
		Aggregate (crushed gravel), generic, dry bulk density, 1600 kg/m3	494,400 kg	60	Asphalt reuse via reprocessing		0 kg	0 kg
		Asphalt road - Cold construction method	1,243,725 kg	30	Asphalt reuse via reprocessing		1,243,725 kg	0 kg
		Gravel, dry bulk density, 1680 kg/m3	2,595,600 kg	60	Backfilling (for inert materials)		2,595,600 kg	0 kg
		Concrete paving., 15.4 m2/m3, 96 units/m3, Andover Textured (Aggregate Industries)	4,449,600 kg	60	Rebar separated (2 %), concrete to aggregate		4,449,600 kg	0 kg
Refrigerants		**Refrigerant name**	**Initial Charge(kg)**	**Annual leakage rate %**	**Refrigerant GWP ($kgCO_2e/kg$)**	**End of Life recovery rate %**		
a	Refrigerants Type 1 (if applicable) - please see CIBSE TM65 for methodology	R32	330	2	700.01	99		Please add rows if required
b	Refrigerants Type 2 (if applicable) - please see CIBSE TM65 for methodology							
c	Refrigerants Type 3 (if applicable) - please see CIBSE TM65 for methodology							
		TOTAL	106,531,395 kg				17,201,830 kg	89,435,051 kg
		Material intensity (kg/m2 GIA)	1,783 kg/m2 GIA				288 kg/m2 GIA	1,497 kg/m2 GIA

GWP POTENTIAL FOR ALL LIFE-CYCLE MODULES ($kgCO_2e$) (See Note 1 below if you entered a reference study period in cell C12)		**Sequestered (or biogenic) carbon** (negative value) **($kgCO_2e$)**	**Product stage ($kgCO_2e$)**	**Construction process stage ($kgCO_2e$)**		**Use stage ($kgCO_2e$)**							**End of Life (EoL) stage ($kgCO_2e$)**				**TOTAL Modules A-C $kgCO_2e$**	**Benefits and loads beyond the system boundary ($kgCO_2e$)**
			Module A			**Module B**							**Module C**					**Module D**
Building element category			**[A1] to [A3]**	**[A4]**	**[A5]**	**[B1]**	**[B2]**	**[B3]**	**[B4]**	**[B5]**	**[B6]**	**[B7]**	**[C1]**	**[C2]**	**[C3]**	**[C4]**		
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment																0 kg CO2e	
0.2	Major Demolition Works												35,700 kg CO2e				35,700 kg CO2e	
0.3	Temporary Support to Adjacent Structures																0 kg CO2e	
0.4	Specialist Ground Works																0 kg CO2e	
0.5	Temporary Diversion Works																0 kg CO2e	
1	**Substructure**	0 kg CO2e	4,199,047 kg CO2e	1,349,480 kg CO2e	250,796 kg CO2e	49,788 kg CO2e	12,447 kg CO2e	0 kg CO2e	24,288 kg CO2e	0 kg CO2e				120,201 kg CO2e	141,313 kg CO2e		6,147,361 kg CO2e	-982,872 kg CO2e
2.1	Superstructure: Frame	0 kg CO2e	3,476,383 kg CO2e	138,201 kg CO2e	157,599 kg CO2e	49,788 kg CO2e	12,447 kg CO2e	0 kg CO2e						103,285 kg CO2e	8,915 kg CO2e		3,946,619 kg CO2e	-872,591 kg CO2e
2.2	Superstructure: Upper Floors	0 kg CO2e	3,827,497 kg CO2e	181,873 kg CO2e	203,975 kg CO2e	49,788 kg CO2e	12,447 kg CO2e	0 kg CO2e						122,159 kg CO2e	10,987 kg CO2e		4,408,726 kg CO2e	-997,447 kg CO2e
2.3	Superstructure: Roof	0 kg CO2e	430,803 kg CO2e	13,263 kg CO2e	4,050 kg CO2e	49,788 kg CO2e	12,447 kg CO2e	0 kg CO2e	167,856 kg CO2e	0 kg CO2e				15,235 kg CO2e	111,387 kg CO2e	792 kg CO2e	805,621 kg CO2e	-348,146 kg CO2e
2.4	Superstructure: Stairs and Ramps	0 kg CO2e	210,957 kg CO2e	8,607 kg CO2e	8,399 kg CO2e	49,788 kg CO2e	12,447 kg CO2e	0 kg CO2e						5,081 kg CO2e	482 kg CO2e		295,761 kg CO2e	-64,499 kg CO2e
2.5	Superstructure: External Walls	0 kg CO2e	4,172,404 kg CO2e	28,855 kg CO2e	325,541 kg CO2e	49,788 kg CO2e	12,447 kg CO2e	0 kg CO2e	17,500 kg CO2e	0 kg CO2e				44,316 kg CO2e	4,157 kg CO2e	2,488 kg CO2e	4,657,496 kg CO2e	-168,590 kg CO2e
2.6	Superstructure: Windows and External Doors	-139,748 kg CO2e	2,800,816 kg CO2e	6,061 kg CO2e	0 kg CO2e	49,788 kg CO2e	12,447 kg CO2e	1,221,424 kg CO2e	2,838,494 kg CO2e	0 kg CO2e				30,903 kg CO2e	140,054 kg CO2e	409 kg CO2e	6,960,647 kg CO2e	-312,846 kg CO2e
2.7	Superstructure: Internal Walls and Partitions	0 kg CO2e	1,146,785 kg CO2e	5,539 kg CO2e	105,596 kg CO2e	49,788 kg CO2e	12,447 kg CO2e	0 kg CO2e	222,326 kg CO2e	0 kg CO2e				46,634 kg CO2e	1,650 kg CO2e	474 kg CO2e	1,591,238 kg CO2e	-161,355 kg CO2e
2.8	Superstructure: Internal Doors	-482,581 kg CO2e	418,669 kg CO2e	2,198 kg CO2e	0 kg CO2e	49,788 kg CO2e	12,447 kg CO2e	0 kg CO2e	420,867 kg CO2e	0 kg CO2e					482,581 kg CO2e		903,969 kg CO2e	-848,528 kg CO2e
3	**Finishes**	-742,816 kg CO2e	1,010,789 kg CO2e	4,478 kg CO2e	82,798 kg CO2e	49,788 kg CO2e	12,447 kg CO2e	146,039 kg CO2e	1,392,813 kg CO2e	0 kg CO2e				3,387 kg CO2e	744,430 kg CO2e	170 kg CO2e	2,704,323 kg CO2e	-1,114,750 kg CO2e
4	**Fittings, furnishings & equipment**	-210,263 kg CO2e	652,781 kg CO2e	3,873 kg CO2e	37,499 kg CO2e	49,788 kg CO2e	12,447 kg CO2e	132,090 kg CO2e	1,032,582 kg CO2e	0 kg CO2e				2,464 kg CO2e	213,257 kg CO2e	166 kg CO2e	1,926,684 kg CO2e	-717,323 kg CO2e
5	**Services (MEP)**	0 kg CO2e	4,480,064 kg CO2e	19,411 kg CO2e	17,222 kg CO2e	49,788 kg CO2e	12,447 kg CO2e	2,150,028 kg CO2e	6,482,456 kg CO2e	0 kg CO2e	7,287,157 kg CO2e	11,149,277 kg CO2e	1,286,370 kg CO2e	25,800 kg CO2e	2,317 kg CO2e	175 kg CO2e	32,962,513 kg CO2e	-4,654,054 kg CO2e
6	**Prefabricated Buildings and Building Units**																0 kg CO2e	
7	**Work to Existing Building**																0 kg CO2e	
8	**External works**	-50,219 kg CO2e	1,161,562 kg CO2e	29,457 kg CO2e	7 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	111,859 kg CO2e	0 kg CO2e				26,156 kg CO2e	58,989 kg CO2e	0 kg CO2e	1,337,811 kg CO2e	-306,154 kg CO2e
Other site construction impacts or overall construction stage [A5] carbon emissions not specific to an individual building element category					2,483,764 kg CO2e												2,483,764 kg CO2e	
TOTAL kg CO_2e		**-1,625,627 kg CO2e**	**27,988,557 kg CO2e**	**1,791,296 kg CO2e**	**3,677,246 kg CO2e**	**597,460 kg CO2e**	**149,365 kg CO2e**	**3,649,581 kg CO2e**	**12,711,041 kg CO2e**	**0 kg CO2e**	**18,436,434 kg CO2e**	**1,286,370 kg CO2e**	**35,700 kg CO2e**	**545,619 kg CO2e**	**1,920,518 kg CO2e**	**4,674 kg CO2e**	**71,168,233 kg CO2e**	**-11,549,155 kg CO2e**
TOTAL - kg CO_2e/m^2 GIA		**-27 kg CO2e/m2 GIA**	**468 kg CO2e/m2 GIA**	**30 kg CO2e/m2 GIA**	**62 kg CO2e/m2 GIA**	**10 kg CO2e/m2 GIA**	**3 kg CO2e/m2 GIA**	**61 kg CO2e/m2 GIA**	**213 kg CO2e/m2 GIA**	**0 kg CO2e/m2 GIA**	**309 kg CO2e/m2 GIA**	**22 kg CO2e/m2 GIA**	**1 kg CO2e/m2 GIA**	**9 kg CO2e/m2 GIA**	**32 kg CO2e/m2 GIA**	**0 kg CO2e/m2 GIA**	**1,191 kg CO2e/m2 GIA**	**-193 kg CO2e/m2 GIA**

Notes:

1 If you have entered a reference study period in cell C12 because the assumed building life expectancy is greater or less than 60 years, then you will need to fill in this table using a 60 year building life expectancy. If you choose to, you may create a second table below and complete it using the actual assumed life expectancy. This should be clearly labelled.

Project details	
Project name	
Planning application reference number (if applicable)	
Use Class	
Brief description of the project	
GIA (m^2)	

Assessment details	
Authors (organisation or individuals)	
Date of assessment	
Operational modelling methodology for Module B6 results	e.g. SAP or TM54
Reference study period (if not 60 years)	[This cell should only be filled in if the reference study period, i.e. the assumed building life expectancy, exceeds or is less than 60 years. Applicants should state the reference study period in this cell. While the assessment should still be done to 60 years, applicants may, if they choose to, submit an additional assessment of the modules B, C and D for the actual reference study period by copying and pasting an additional 'GWP potential for all life-cycle modules' table, see below].
Software tool used	[This should align with the software tool used at outline/detailed planning stage]
Type of EPDs and carbon database used	[If using more than one database please list all]
Please confirm if 95% of the cost allocated to each building element category has been accounted for in the assessment?	[Yes / No]
Explanation of mechanisms which have been adopted to quality assure the submission	
Please confirm whether you have submitted this assessment to the Built Environment Carbon Database (https://www.becd.co.uk/) or if you give permission for the GLA to do this on your behalf by checking one of the following boxes	I have submitted this assessment to the BECD ☐
	I give permission for the GLA to submit this assessment to the BECD on my behalf ☐

Key	
	Data automatically calculated - no direct input required
	Cells that require information / data inputting
	N/A

List of product specific EPDs for products that have been installed	Product	EPD reference number
	[Please add rows if needed]	

Please confirm the following post-construction evidence has been submitted with this WLC assessment	
Site energy (including fuel) use record	[Yes / No]
Contractor confirmation of as-built quantities and specifications	[Yes / No]
Record of material delivery including distance travelled and transportation mode	[Yes / No]
Waste transportation record include waste quantity, distance travelled and transportation mode	[Yes / No]

WLC emissions baseline
(automatically populated from the 'detailed planning stage' tab)

	Module A1-A5 (excluding sequestered carbon)	Modules B-C (excl B6 & B7)	Modules A-C (excl B6-B7; including sequestered carbon)	Module B1-B5	Module B6-B7	Module C1-C4	Module D
TOTAL kg CO_2e	33,457,099 kg CO2e	19,613,957 kg CO2e	51,445,429 kg CO2e	17,107,447 kg CO2e	19,722,804 kg CO2e	2,506,510 kg CO2e	-11,549,155 kg CO2e
TOTAL kg CO_2e/m^2 GIA	559.989	328.289	861.069	286.336	330.111	41.953	-193.304

Post-construction WLC emissions

	Module A1-A5	Modules B-C (excl B6 & B7)	Modules A-C (excl B6-B7; including sequestered carbon)	Module B1-B5	Module B6-B7	Module C1-C4	Module D
TOTAL kg CO_2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	0 kg CO2e	#VALUE!	0 kg CO2e	0 kg CO2e
TOTAL kg CO_2e/m^2 GIA	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#VALUE!	#DIV/0!	#DIV/0!
Please select most appropriate benchmark from drop-down menu							
WLC Benchmark	#N/A	#N/A	#N/A				
Aspirational WLC Benchmark	#N/A	#N/A	#N/A				
Commentary comparing the post-construction results against the WLC emissions baseline above	[Explain the reasons for any divergences from the results against the WLC emissions baseline above]						
Commentary comparing the post-construction results against the WLC benchmarks (see Appendix 2)	[Explain the reasons for any divergences from WLC benchmarks, including against the WLC aspirational benchmarks]						

Retention of existing buildings and structures	
Confirmation of which options for retaining existing buildings and structures that were under exploration at planning stages have been implemented	
Actual carbon emissions associated with pre-construction demolition ($kgCO_2e$)	
Estimate of the percentage of the new build development which is made up of existing elements	[e.g. X% existing facades; Y% existing foundations; Z% superstructures etc.]

Summary of key actions undertaken to reduce whole life-cycle carbon emissions, including the reductions achieved	Action undertaken	WLC reduction achieved (kg CO_2e/m^2 GIA)
	[This list does not need to be exhaustive but should identify the actions with the biggest impacts. Insert more lines if needed]	

Lessons learnt from the process of undertaking a WLC assessment that will inform future projects	
	i.e. Design options or materials that could be used, design principles that could be applied.
	[Insert more lines if needed]

MATERIAL QUANTITY AND END OF LIFE SCENARIOS		Product and Construction Stage (Module A)		Assumptions made with respect to maintenance, repair and replacement cycles (Module B)	Material 'end of life' scenarios (Module C)	Benefits and loads beyond the system boundary (Module D)	
Building element category		Material type	Material quantity (kg)			Estimated reusable materials (kg)	Estimated recyclable materials (kg)
Note/example		Breakdown of material type in each category [Insert more lines if needed] e.g. Concrete	65000 kg	For all primary building systems (structure, substructure, envelope, MEP services, internal finishes) including assumed material/product lifespans and annual maintenance/repair %	Declare 'end of life' scenario as per project's Circular Economy Statement, and used in the WLC assessment to produce Module C results	0 kg	25 kg
		e.g. Reinforcement	5000 kg			2 kg	8 kg
		e.g. Formwork	250 kg			0 kg	0 kg
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment						
0.2	Major Demolition Works						
0.3	Temporary Support to Adjacent Structures						

Please add rows where more than 1 material type exists per building element category

0.4	Specialist Ground Works						
1	Substructure						
2.1	Superstructure: Frame						
2.2	Superstructure: Upper Floors						
2.3	Superstructure: Roof						
2.4	Superstructure: Stairs and Ramps						
2.5	Superstructure: External Walls						
2.6	Superstructure: Windows and External Doors						
2.7	Superstructure: Internal Walls and Partitions						
2.8	Superstructure: Internal Doors						
3	Finishes						
4	Fittings, furnishings & equipment (FFE)						
5	Services (MEP)						
6	Prefabricated Buildings and Building Units						
7	Work to Existing Building						
8	External works						

Refrigerants		**Refrigerant name**	**Initial Charge(kg)**	**Annual leakage rate %**	**Refrigerant GWP ($kgCO_2e/kg$)**	**End of Life recovery rate %**		
a	Refrigerants Type 1 (if applicable) - please see CIBSE TM65 for methodology							Please add rows if required
b	Refrigerants Type 2 (if applicable) - please see CIBSE TM65 for methodology							
c	Refrigerants Type 3 (if applicable) - please see CIBSE TM65 for methodology							
		TOTAL	0 kg				0 kg	0 kg
		Material intensity (kg/m2 GIA)	#DIV/0!				#DIV/0!	#DIV/0!

GWP POTENTIAL FOR ALL LIFE-CYCLE MODULES ($kgCO_2e$) (See Note 1 below if you entered a reference study period in cell C12)		**Sequestered (or biogenic) carbon** (negative value) **($kgCO_2e$)**	**Product stage ($kgCO_2e$)**	**Construction process stage ($kgCO_2e$)**		**Use stage ($kgCO_2e$)**							**End of Life (EoL) stage ($kgCO_2e$)**				**TOTAL Modules A-C $kgCO_2e$**	**Benefits and loads beyond the system boundary ($kgCO_2e$)**
			Module A			**Module B**							**Module C**					**Module D**
Building element category			**[A1] to [A3]**	**[A4]**	**[A5]**	**[B1]**	**[B2]**	**[B3]**	**[B4]**	**[B5]**	**[B6]**	**[B7]**	**[C1]**	**[C2]**	**[C3]**	**[C4]**		
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
0.2	Major Demolition Works												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
0.3	Temporary Support to Adjacent Structures												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
0.4	Specialist Ground Works												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
0.5	Temporary Diversion Works												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
1	Substructure												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.1	Superstructure: Frame												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.2	Superstructure: Upper Floors												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.3	Superstructure: Roof												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.4	Superstructure: Stairs and Ramps												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.5	Superstructure: External Walls												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.6	Superstructure: Windows and External Doors												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.7	Superstructure: Internal Walls and Partitions												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
2.8	Superstructure: Internal Doors												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
3	Finishes												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
4	Fittings, furnishings & equipment												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
5	Services (MEP)										Regulated emissions	Unregulated emissions / Operational Water	[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
6	Prefabricated Buildings and Building Units												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
7	Work to Existing Building												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
8	External works												[Where only a single C1-C4 is known, please include it here]				0 kg CO2e	
Other site construction impacts or overall construction stage [A5] carbon emissions not specific to an individual building element category																	0 kg CO2e	
TOTAL kg CO_2e		**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**#VALUE!**	**Operational Water**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**	**0 kg CO2e**
TOTAL - kg CO_2e/m^2 GIA		**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#VALUE!**	**#VALUE!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**

Notes:

[1] If you have entered a reference study period in cell C12 because the assumed building life expectancy is greater or less than 60 years, then you will need to fill in this table using a 60 year building life expectancy. If you choose to, you may create a second table below and complete it using the actual assumed life expectancy. This should be clearly labelled.

Available benchmarks
Offices
Residential
Schools, Universities etc.
Retail

WLC benchmark	A1-A5	B-C (excl B6 & B7)	A-C (excl B6 & B7)
Offices	<950	<450	<1400
Residential	<850	<350	<1200
Schools, Universities etc.	<750	<250	<1000
Retail	<850	<200	<1050

Aspirational WLC benchmark	A1-A5	B-C (excl B6 & B7)	A-C (excl B6 & B7)
Offices	<600	<370	<970
Residential	<500	<300	<800
Schools, Universities etc.	<500	<175	<675
Retail	<550	<140	<690

MAYOR OF LONDON

'BE SEEN' REPORTING SPREADSHEET

INSTRUCTIONS

The 'be seen' webform should be completed by planning applicants, developers and building owners to submit energy performance data at each reporting stage (planning stage, as-built stage and in-use stage) in order to fulfil the requirements of the Mayor's 'be seen' policy set out in London Plan 2021 Policy SI 2.

Before completing and submitting this spreadsheet to the GLA, applicants should read the **'Be seen' energy monitoring guidance** [https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance-and-spgs/be-seen-energy-monitoring-guidance] and ensure that they have fully understood the process necessary to comply with the policy.

Please note that at each reporting stage the form cannot be saved midway and so users will need to have all the relevant information to hand for the stage they are reporting against in order to submit the webform. The 'be seen' spreadsheet has been developed to enable development teams to capture all data offline before this is submitted via the webform.

By ticking the below box, the person submitting this webform confirms that they are fully authorised by the legal owner to submit data for this

I am fully authorised by the legal owner to submit data for this development	Yes

1. Planning stage

The applicant is required to provide accurate and verified estimates of each of the planning stage performance indicators through the planning stage 'be seen' webform, during the planning application determination period. All the required information can be viewed in the 'be seen' spreadsheet. Select the "All_Inputs" tab, click current reporting stage and select 'planning' from the dropdown list. Applicants should submit the 'be seen' spreadsheet along with any other relevant material as part of the webform submission.

2. As-built stage Final process to be confirmed

Once the as-built design has been completed and prior to the building being handed over (if applicable), the developer is required to provide an accurate and verified update of the estimated performance indicators submitted at planning stage by selecting the "As-built" reporting stage of the "All_Inputs" tab. This will include a number of additional indicators and a greater level of detail compared to the planning stage, along with some additional contextual information. Reporting from this point on will be for individual Reportable Units (RUs). The 'be seen' spreadsheet should be submitted to the GLA (EnergyMonitoringLPG@london.gov.uk) along with any other relevant material (e.g. DEC certificates etc.) or uploaded to the 'be seen' portal, when this is made available. This section will be updated accordingly.

3. In-use stage Final process to be confirmed

During the in-use stage, the owner is required to monitor and report accurate and verified annual energy performance data for each qualifying RU via the 'be seen' spreadsheet for at least five years once the defects liability period (DLP) is complete. Owners are required to select the "Operational Year xxx" reporting stage of the "All_Inputs" tab, depending on the in-use reporting year, and complete the necessary information. The 'be seen' spreadsheet should be submitted to the GLA (EnergyMonitoringLPG@london.gov.uk) along with any other relevant material (e.g. DEC certificates etc.) or uploaded to the 'be seen' portal, when this is made available. This section will be updated accordingly.

OTHER INSTRUCTIONS

Please enable macros when using this spreadsheet.

Macros are used to show/hide sections of the spreadsheet, depending on the stage in the 'be seen' process and the type of development. If you are unable to use macros, please hide/show rows manually.

Key

User Input Cells

<- Free input (some cells are restricted in terms of the format, e.g. numbers)

<- Drop down selection (these may take up to ~30 seconds to run)

Background Cells

<- Result of an internal calculation

\+ <- Hide/show button (click away from the cell and back again to activate).

* <- Required data

QUERIES / FEEDBACK

Any queries of feedback on this spreadsheet should be submitted to:
EnergyMonitoringLPG@london.gov.uk

MAYOR OF LONDON

OVERALL PROGRESS 100%

CURRENT REPORTING STAGE ---------- >>	Planning *

CONTEXTUAL DATA *Progress: 100%*

+ ORGANISATION & CONTACT DETAILS

+ DEVELOPMENT INFORMATION

OVERALL DEVELOPMENT DETAILS

Planning Reference Number	22/P3620 *
Name of Whole Development	Mitcham Gas Works *

DEVELOPMENT LOCATION

Development Address	
Address Line 1	Mitcham Gasworks *
Address Line 2	Western Road
Address Line 3	London
Address Line 4	
London Borough	Merton *
Postcode	CR4 3FL *
Ordnance Survey Reference	
Development UPRN (if available) *Please add if available ->*	
Geo-Location Coordinates	
Latitude (to 6 decimal places)	51.407
Longitude (to 6 decimal places, +ve or -ve)	-0.169

DEVELOPMENT TOTAL AREA BREAKDOWN

Residential		
Total Residential Floor Area	GIA m2	38,048 *
Dwelling Counts		
Flats	number	579 *
House	number	0 *
Non-Residential		
Non-Residential Floor Area Breakdown		*Please include complete non-resi details below*
Landlord Circulation (in Residential Blocks)	GIA m2	5,043 *
General office (A2, B1, B8, D1 planning classes)	GIA m2	624 *
High street agency (A2 planning classes)	GIA m2	*
General retail (A1, SG planning classes)	GIA m2	*
Large non-food shop (A1 planning classes)	GIA m2	*
Small food store	GIA m2	*
Large food store	GIA m2	*
Restaurant (A3, A5 planning classes)	GIA m2	*
Bar, pub or licensed club (A4 planning classes)	GIA m2	*
Hotel (C1 planning classes)	GIA m2	*
Cultural Activities	GIA m2	*
Entertainment halls (D2 planning classes)	GIA m2	*
Swimming pool centre	GIA m2	*
Fitness and health centre	GIA m2	*
Dry sports and leisure facility (D2 planning classes)	GIA m2	*
Covered car park	GIA m2	*
Public buildings with light usage (D1, SG planning classe	GIA m2	*
Schools and seasonal public buildings (D1, D2 planning	GIA m2	*
University campus	GIA m2	*
Clinic (D1 planning classes)	GIA m2	*
Hospital (clinical and research)	GIA m2	*
Long term residential (C1, C2, C2A planning classes)	GIA m2	*
General accommodation (C1, C2, C3 planning classes)	GIA m2	*
Emergency services (SG planning classes)	GIA m2	*
Laboratory or operating theatre	GIA m2	*
Public waiting or circulation (SG planning classes)	GIA m2	*
Terminal (B8 planning classes)	GIA m2	*
Workshop (B1, B2 planning classes)	GIA m2	*
Storage Facility (B8 planning classes)	GIA m2	*
Cold Storage (B8 planning classes)	GIA m2	*
Overall Development Summary		
Total Development Floor Area		
Residential	GIA m2	38,048
Non-Residential	GIA m2	5,667
Total	GIA m2	43,715
Total Non-Residential Uses		Landlord Circulation; General office

+ SUPPLEMENTARY FILES AND UPCOMING REPORTING STAGES

SUPPLEMENTARY FILES

Site Plan		
Does the development have a site plan?	Yes	*
What is the site plan filename?	Z4_0_70109	*
Best Practice Documents		
Does the development have a predicted DEC?	No	*
Is there a base building energy rating (in line with DFP)?	No	*

ANTICIPATED DATES FOR UPCOMING REPORTING STAGES

As-Built Stage	1 Jun 2032	*
Operational Year 1 End	1 Jun 2033	*

DEVELOPMENT PERFORMANCE AND EMISSIONS

Progress: 100%

+ DEVELOPMENT PERFORMANCE

DEVELOPMENT OVERALL PREDICTED PERFORMANCE

Predicted Performance Calculation Details			
Fuel Carbon Intensity Source (aligned with planning energy statemen		SAP 10.2	*
Residential Elements of the development			
Predicted Annual Energy Use		*Fill in all applicable fuels below*	
Annual Electricity Use	kWh/yr	2,319,760	*
Annual Gas Use	kWh/yr	708,028	*
Annual Oil Use (if applicable)	kWh/yr		*
Annual Biomass Use (if applicable)	kWh/yr		*
Annual District Htg Use (if applicable)	kWh/yr		*
Annual District Clg Use (if applicable)	kWh/yr		*
Elec Generation, Gross (if applicable)	kWh/yr		*
Solar Thermal Generation (if applicable)	kWh/yr		*
Predicted Annual Carbon Emissions	tCO2/yr	223	*
Non-Residential Elements of the development (Part L Calculation)			
Predicted Annual Energy Use		*Fill in all applicable fuels below*	
Annual Electricity Use	kWh/yr	55,860	*
Annual Gas Use	kWh/yr	0	*
Annual Oil Use (if applicable)	kWh/yr		*
Annual Biomass Use (if applicable)	kWh/yr		*
Annual District Htg Use (if applicable)	kWh/yr		*
Annual District Clg Use (if applicable)	kWh/yr		*
Elec Generation, Gross (if applicable)	kWh/yr		*
Solar Thermal Generation (if applicable)	kWh/yr		*
Predicted Annual Carbon Emissions	tCO2/yr	3	*
Non-Residential Elements of the development (TM54 Calculation)			
Predicted Annual Energy Use		*Fill in all applicable fuels below*	
Annual Electricity Use	kWh/yr	156,931	*
Annual Gas Use	kWh/yr	0	*
Annual Oil Use (if applicable)	kWh/yr		*
Annual Biomass Use (if applicable)	kWh/yr		*
Annual District Htg Use (if applicable)	kWh/yr		*
Annual District Clg Use (if applicable)	kWh/yr		*
Elec Generation, Gross (if applicable)	kWh/yr		*
Solar Thermal Generation (if applicable)	kWh/yr		*
Predicted Annual Carbon Emissions	tCO2/yr	21	*

CARBON OFFSETTING

Predicted Carbon Shortfall (aligned with planning energy st	tCO2	223	*
Total Committed Carbon Offset	£	643,776	*

END

GLA Carbon Emissions Reporting Spreadsheet

BACKGROUND AND PURPOSE

From **January 2023** planning applicants for new and refurbishments schemes are required to use this spreadsheet to report the anticipated carbon performance of a development. It should be used for both domestic and non-domestic uses. This spreadsheet ensures a consistent and transparent process for presenting Part L 2021 CO_2 emission performance. The GLA will not accept the use of alternative methodologies or tools. This is to ensure consistency and to minimise the need for clarifications during the planning application determination period.

Planning applicants should use Part L 2021 BRUKL and SAP outputs to fill in this spreadsheet which serves as a the final step in reporting the carbon emission performance of the proposed energy strategy. **It is solely for the purpose of reporting compliance with the London Plan to the GLA and does not replace Part L calculations submitted for Building Regulations approval.**

The spreadsheet has been developed to fit as wide a range of policy compliant approaches for schemes as possible. Any planning applicants with a policy compliant approach that the spreadsheet does not serve should contact the GLA at: **ZeroCarbonPlanning@london.gov.uk**. Applicants must not amend or alter the spreadsheet to suit non-policy compliant strategies. Any unauthorised amendment to the spreadsheet will invalidate the CO_2 emission calculations.

Applicants should note that we will update the spreadsheet from time to time to ensure it remains fit for purpose. Applicants are expected to use the latest version at the time of the planning submission.

Any feedback on this spreadsheet should be sent to: ZeroCarbonPlanning@london.gov.uk.

METHODOLOGY

Applicants are required to complete **all** light blue input cells in the applicable tabs prior to submission ('Development Information', 'Part L Outputs', 'EUI & space heating demand' and 'GLA Summary Tables').

Input Data

For all applications, the input data required includes:

'Development information' tab

- Table 1. Application Completeness Check
- Table 2. Development Details
- Table 3. Bespoke District Heating Carbon Factors (if applicable)
- Table 4. Distribution loss factor (if applicable)
- Table 5. SCoP Calculation Methodology (if applicable)

'Part L Output' tab

- Type of units modelled
- Area of units modelled (m^2)
- Number of units modelled
- Total area represented by model (m^2)
- TER, DER and BER figures ($kgCO_2/m^2$ p.a.)
- Notional building Energy saving/generation technologies (-) for residential ($kgCO_2$ p.a.)
- Notional building Displaced electricity (-) for non-residential (kWh//m^2 p.a.)
- TFEE and DFEE figures for residential (kWh//m^2 p.a.)

'GLA Summary tables' tab

- Unregulated figures (tCO_2 p.a.)
- Actual and notional building cooling demand (MJ/m^2)

Note: The total carbon emissions figures in the 'GLA Summary tables' tab are now calculated based on the area input for 'Total area represented by model (m^2)'. This input requirement has been added to ensure that the carbon emission figures align with the development area schedule (included within the DAS) rather than the number of representative models.

'EUI & Space Heating Demand' tab

- Confirmation of building type
- Gross Internal Area (GIA) in m^2
- Energy Use Intensity (EUI) per fuel type (kWh p.a.)
- Space heating demand (kWh p.a.)
- Confirmation that both regulated and unregulated energy use has been included
- Confirmation of predicted energy use methodology, including modelling software
- Notes on the assessment, including justification if expected performance differs from Table 4

Note: Applicants can use the ‘be seen’ methodology or an alternative predictive energy modelling methodology to fill in the required EUI & space heating demand information.
Where ‘be seen’ reporting is used the reported EUI and space heating demand should align with energy consumption data reported in the planning stage submission for the ‘be seen’ policy, submitted via the online webform.

Required Part L Outputs for the GLA spreadsheet

Domestic Part L Outputs:

For the domestic conversion applicants are required to use the outputs from the SAP TER and DER worksheets. To assist in the process the required SAP worksheet rows have been referenced in each input cell. Note: The SAP worksheet rows are based on a communal heating system in line with GLA policy and guidance. Applicants proposing individual systems must first seek confirmation from the GLA as to whether the approach will be acceptable.

Non-domestic Part L Outputs:

Regarding the non-domestic uses, the applicant can determine whether each individual unit will be modelled independently and apportioned to the entire scheme or whether a single model will be generated for the entire development. The applicant should, however, include the results from all BRUKL outputs generated for the proposed development under the "NON-RESIDENTIAL CO_2 ANALYSIS" sections. Applicants are generally encouraged to model each individual typology independently.

Validation Check

Applicants must ensure that the calculated TER/DER/BER in this spreadsheet matches the actual values from the Part L 2021 BRUKL and SAP worksheets. The Part L 2021 BRUKL and SAP sheet must accompany the energy assessment so that results can be validated.

TABLE 1. APPLICATION COMPLETENESS CHECK	
Development information tab (Tables 1-4) completed and included in appendix of energy strategy?	yes
Part L outputs tab completed	yes
EUI & space heating demand completed	yes
Confirmation that the planning stage webform will be completed at planning application submission and that the Be Seen process and reporting responsibilities are fully understood, including the requirement for as-built and in-use stage reporting to be undertaken (or where the legal owner [redacted] from one reporting stage to another that the responsible party will be notified).	yes

TABLE 2. DEVELOPMENT DETAILS		Further notes	Response	Supporting comments (or signpost sections in the energy assessment)
Application details	Date of Application	Please provide the date the application was submitted to the Local Planning Authority.		
	Local Planning Authority	Please indicate the Local Planning Authority determining the application.	*London Borough of Merton*	
	Confirmed carbon offset price (£/tonne of carbon dioxide)	Please confirm the agreed carbon offset price for the Local Planning Authority. If no value is entered then the GLA's recommend price of £95 per tonne of carbon dioxide will be used.	*95.00*	
	Evidence of communication on the carbon offset price included in the energy assessment (Y/N).		*N*	
	Residential units number (Part L1)		*595*	
	Non-residential floor area in m^2 (Part L2)		*691.78*	
Heat risk	CIBSE TM59 undertaken for residential development (Y/N)		*Y*	
	CIBSE TM52 undertaken for non-residential development (Y/N)		*Y*	
	All sample units meet CIBSE criteria with DSY1 weather file (Y/N)		*Y*	
	DSY2 and DSY3 included in overheating assessments (Y/N)		*Y*	*Supplementary document provided with this info*
	Residential g-value		*0.40*	
	% Glazing Ratio over façade			
	External shading proposed (Y/N)		*N*	
Energy efficiency measures	Target Fabric Energy Efficiency met (Y/N)		*Y*	
	Mechanical Ventilation with Heat Recovery included (Y/N)		*Y*	
	Waste Water Heat Recovery (Y/N)		*N*	
	Low energy lighting (Y/N)		*Y*	
District heating connection	Development in a Heat Network Priority Area (HNPA) (Y/N)		*N*	
	District Heating Network connection (Y/N)		*N*	
	Name of District Heating Network			
	Carbon factor ($kgCO_2$/ kWh)			*In line with SAP10.2 / Part L 2021 methodology*

	Borough energy officer and Heat Network Operator contacted and evidence of correspondence included in the energy strategy (Y/N)	Applicable to all applications.	*Y*	*Include in appendices of energy statement (v2)*
Site heating distribution configuration	Development future proofed for DHN connection (Y/N)	Note that individual heating systems would not be appropriate for developments in HNPAs.	*Y*	
	Drawings of communal system provided (Y/N)	Applicants should provide a drawings of the energy centre, on-site communal network with all building uses connected and future proofing arrangements detailed, including single point of connection.	*N*	
	Distribution type			
	Flow temperature (°C)			
	Return temperature (°C)			
	Distribution losses modelled (%)	See table 4 below for details.		
Heating system performance	Heat Pump (Y/N)		*Y*	
	Heat Pump source		*Air Source*	
	Centralised Heat Pump capacity (kWth)			
	Heat Pump Seasonal Heating Efficiency (SCoP)		*2.80*	
	Heat Pump SCoP calculation includes heat source and heat distribution temperature and seasonal performance factor (Y/N)	See table 5 below for details.		
	Fraction of heat supplied by heat pump (only for hybrid systems with boilers) (%)		*0.80*	
	Low-emission on-site CHP enabling an area-wide heat network (Y/N)	Only low-emission CHP is suitable and only where it is facilitating an area-wide heat network. Therefore, new gas engine CHP is not suitable for any other purpose for new developments.	*N*	
	CHP (kWe)			
	Estimated end user cost (pence/kWh)			
	Energy assessment includes consideration of occupant running costs (Y/N)	Applicants should consider the estimated costs to occupants of the energy assessment and outline how they are committed to protecting the consumer from high prices.	*Y*	
Solar technologies	Solar PV included (Y/N)		*Y*	
	Roof layout demonstrating solar PV technologies have been maximised included in energy strategy (Y/N)		*Y*	
	kWh generated		*100786.00*	
	kWp		*130.50*	
	Total PV panel area (m^2) installed			
	Solar Thermal included (Y/N)		*N*	
	Solar Thermal panel area (m^2) installed			
Flexibility and peak energy demand	Site-wide peak demand, capacity and flexibility potential included in energy assessment (Y/N)	Table 9 in the energy assessment guidance to be completed.	*N*	
	Interventions for achieving flexibility included in energy assessment (Y/N)	Table 10 in the energy assessment guidance to be completed.	*N*	
	Estimated peak demand (MW)			
	Electrical energy storage (kWh) capacity			
	Heat energy storage (kWh) capacity			
Other technologies	System type (e.g. wind turbine)			
	Capacity (kW)			

Cooling	Cooling proposed - Residential (Y/N)	It is not expected that 'active cooling' will be proposed for any residential developments. It will be expected that applicants can fully demonstrate that all passive design measures have been thoroughly investigated before considering 'active cooling'.	*N*	
	Cooling proposed - Non-residential (Y/N)		*Y*	
	Residential Cooling consumption (kWh p.a.)	See note in cell C60.		
	Commercial Cooling consumption (MJ p.a.)		*96572.49*	

TABLE 3. BESPOKE DH CARBON FACTOR CALCULATION METHODOLOGY

Please provide below details of the calculation methodology followed to establish the bespoke carbon factor, if applicable.

TABLE 4. DISTRIBUTION LOSSES				**COMMENTS**
Primary network (buried pipe)	Total pipe length (m)			
	Average heat loss rate (W/m)			
Secondary network (buried pipe)	Total pipe length (m)			
	Average heat loss rate (W/m)			
Total losses (MWh/year)				
Total heat supplied (MWh/year)				
Distribution Loss Factor (DLF)				
Calculation included in energy statement (yes/no)				

TABLE 5. SEASONAL COEFFICIENT OF PERFORMANCE (SCOP) CALCULATION METHODOLOGY

Details of the Seasonal Coefficient of Performance (SCOP), the Seasonal Performance Factor (SFP) and Seasonal Energy Efficiency ratio (SEER), which should be used in the energy modelling. This should be based on a dynamic calculation of the system boundaries over the course of a year i.e. incorporating variations in source temperatures and the design sink temperatures (for space heat and hot water). Details of the assumptions should be included in the energy assessment, including manufacturer datasheets showing performance under test conditions for the specific source and sink temperatures of the proposed development and assumptions for hours spent under [redacted] source temperatures.

The applicant should complete all the light blue cells including information on the modelled units, the area per unit, the number of units, the TER/DER/BER and the TFEE/DFEE.

RESIDENTIAL CO_2 ANALYSIS (PART L1)

				Baseline		'Be Lean'	'Be Clean'	'Be Green'	Fabric Energy Efficiency (FEE)		Baseline		'Be Lean'			'Be Clean'			'Be Green'	
Unit identifier (e.g. plot number, dwelling type etc.)	Model total floor area	Number of units	Total area represented by model	TER	Energy saving/generation technologies (-)	DER	DER	DER	Target Fabric Energy Efficiency	Dwelling Fabric Energy Efficiency	Part L 2021 CO_2 emissions	Energy saving/generation technologies	Part L 2021 CO_2 emissions	Part L 2021 CO_2 emissions with Notional PV savings included	'Be Lean' savings	Part L 2021 CO_2 emissions	Part L 2021 CO_2 emissions with Notional PV savings included	'Be Clean' savings	Part L 2021 CO_2 emissions	'Be Green' savings
	(m^2) (Row 4)		(m^2)	($kgCO_2$ / m^2) (Row 273)	($kgCO_2$ p.a.) (Row 269)	($kgCO_2$ / m^2) (Row 273 or 384)	($kgCO_2$ / m^2) (Row 273 or 384)	($kgCO_2$ / m^2) (Row 273 or 384)	(kWh/m^2)	(kWh/m^2)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)
1B2P Mid EF	*51.35*	*43*	*2208.05*	**15.84**	**-41.26**	**14.93**	**7.60**	**7.13**	34.87	32.62	**34,976**	**-1,774**	**32,966**	**31,192**	**3,783**	**16,781**	**15,007**	**16,185**	**15,743**	**-736**
1B2P Mid MF	*51.35*	*142*	*7291.7*	**13.44**	**-41.26**	**12.57**	**6.41**	**5.94**	23.85	22.87	**98,000**	**-5,859**	**91,657**	**85,798**	**12,203**	**46,740**	**40,881**	**44,917**	**43,313**	**-2,432**
1B2P Mid TF	*51.35*	*41*	*2105.35*	**15.23**	**-41.26**	**13.65**	**6.90**	**6.43**	32.70	29.87	**32,064**	**-1,692**	**28,738**	**27,046**	**5,018**	**14,527**	**12,835**	**14,211**	**13,537**	**-702**
2B4P End EF	*62.1*	*64*	*3974.4*	**15.41**	**-49.89**	**14.52**	**7.43**	**7.03**	38.50	35.88	**61,246**	**-3,193**	**57,708**	**54,515**	**6,730**	**29,530**	**26,337**	**28,178**	**27,940**	**-1,603**
2B4P End MF	*62.1*	*92*	*5713.2*	**13.24**	**-49.89**	**12.41**	**6.28**	**5.89**	28.49	27.10	**75,643**	**-4,590**	**70,901**	**66,311**	**9,332**	**35,879**	**31,289**	**35,022**	**33,651**	**-2,362**
2B4P End TF	*62.1*	*43*	*2670.3*	**15.75**	**-49.89**	**14.10**	**7.09**	**6.70**	40.32	35.85	**42,057**	**-2,145**	**37,651**	**35,506**	**6,551**	**18,932**	**16,787**	**18,719**	**17,891**	**-1,104**
2B4P Mid MF	*83.95*	*39*	*3274.05*	**10.69**	**-67.42**	**9.75**	**5.01**	**4.72**	22.52	22.15	**35,000**	**-2,629**	**31,922**	**29,293**	**5,707**	**16,403**	**13,774**	**15,519**	**15,454**	**-1,680**
2B4P Mid MF Cor	*83.3*	*43*	*3581.9*	**12.04**	**-66.90**	**11.24**	**5.76**	**5.47**	28.59	29.11	**43,126**	**-2,877**	**40,261**	**37,384**	**5,742**	**20,632**	**17,755**	**19,629**	**19,593**	**-1,838**
3B5P End MF	*89.75*	*58*	*5205.5*	**12.34**	**-72.07**	**11.12**	**5.68**	**5.40**	32.87	30.87	**64,236**	**-4,180**	**57,885**	**53,705**	**10,531**	**29,567**	**25,387**	**28,318**	**28,110**	**-2,723**
3B5P End TF	*89.75*	*14*	*1256.5*	**14.93**	**-72.07**	**12.96**	**6.52**	**6.25**	44.70	40.02	**18,760**	**-1,009**	**16,284**	**15,275**	**3,484**	**8,192**	**7,183**	**8,092**	**7,853**	**-670**
Sum		**579**	**37,281**	**13.5**	**-54.2**	**12.5**	**6.4**	**6.0**	**30.8**	**29.0**	***505,107***	***-29,948***	***465,973***	***436,026***	***69,081***	***237,183***	***207,236***	***228,790***	***223,085***	***-15,849***

NON-RESIDENTIAL CO_2 ANALYSIS (PART L2)

				Baseline		'Be Lean'	'Be Clean'	'Be Green'			Baseline		'Be Lean'			'Be Clean'			'Be Green'	
Building Use	Model Area	Number of units	Total area represented by model	BRUKL TER	BRUKL Displaced electricity (-)	BRUKL BER	BRUKL BER	BRUKL BER			Part L 2021 CO_2 emissions	Energy saving/generation technologies	Part L 2021 CO_2 emissions	Part L 2021 CO_2 emissions with Notional PV savings included	'Be Lean' savings	Part L 2021 CO_2 emissions	Part L 2021 CO_2 emissions with Notional PV savings included	'Be Clean' savings	Part L 2021 CO_2 emissions	'Be Green' savings
	(m^2)		(m^2)	($kgCO_2$ / m^2)	(kWh / m^2)	($kgCO_2$ / m^2)	($kgCO_2$ / m^2)	($kgCO_2$ / m^2)			($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)
All commercial	*624*	*1*	*624*	**6.97**	**0.00**	**5.53**	**5.53**	**4.49**			**4,349**	**0.00**	**3,450.72**	**3,451**	**899**	**3,451**	**3,451**	**0**	**2,802**	**649**

Sum	1	624	7.0	0.0	5.5	5.5	4.5			*4,349*	*0*	*3,451*	*3,451*	*899*	*3,451*	*3,451*	*0*	*2,802*	*649*
SITE-WIDE ENERGY CONSUMPTION AND CO_2 ANALYSIS																				
Total Sum		37,905	-	-	-	-	-			*509,456*	*-29,948*	*469,424*	*439,476*	*69,980*	*240,634*	*210,687*	*228,790*	*225,886*	*-15,200*

Applicants can use the 'be seen' methodology or an alternative predictive energy modelling methodology to fill in this tab.
Where 'be seen' reporting is used the reported EUI and space heating demand should align with energy consumption data reported in the planning stage submission for the 'be seen' policy, submitted via the online webform.

Residential predicted energy use

Building type	GIA (m^2)	EUI & space heating demand (kWh/year)									Has the following energy use been included?		Results		Table 4 of the guidance comparison		Methodology used		
		Space heating demand	Annual Electricity Use	Annual Gas Use	Annual Oil Use	Annual Biomass Use	Annual District Htg Use	Annual District Clg Use	Elec Generation, Gross	Solar Thermal Generation	Regulated	Unregulated	EUI (kWh/m^2/year) (excluding renewable energy)	Space heating demand (kWh/m^2/year) (excluding renewable energy)	EUI value from Table 4 of the guidance (kWh/m^2/year) (excluding renewable energy)	Space heating demand from Table 4 of the guidance (kWh/m^2/year) (excluding renewable energy)	Software	Operational energy use assessment	notes (if expected performance differs from the Table 4 values in the guidance or other software used)
					if applicable	if applicable	if applicable	if applicable	if applicable	if applicable									
Residential use (total)	38,048	426,742	2,203,506	521,705					110079		Yes	No	71.6256045	11.2158852	35	15	Part L1 - SAP 10.2	none	
Landlord Circulation (in Residential Blocks)																			
Total	38048	426742	2203506	521705	0	0	0	0	110079	0									

Non-residential predicted energy use

Building type	GIA (m^2)	EUI & space heating demand (kWh/year)									Has the following energy use been included?		Results		Table 4 of the guidance comparison		Methodology used		
		Space heating demand	Annual Electricity Use	Annual Gas Use	Annual Oil Use	Annual Biomass Use	Annual District Htg Use	Annual District Clg Use	Elec Generation, Gross	Solar Thermal Generation	Regulated	Unregulated	EUI (kWh/m^2/year) (excluding renewable energy)	Space heating demand (kWh/m^2/year) (excluding renewable energy)	EUI value from Table 4 of the guidance (kWh/m^2/year) (excluding renewable energy)	Space heating demand from Table 4 of the guidance (kWh/m^2/year) (excluding renewable energy)	Software	Operational energy use assessment	notes (if expected performance differs from the Table 4 values in the guidance or other software used)
					if applicable	if applicable	if applicable	if applicable	if applicable	if applicable									
All other non-residential	624	2,072	55,860								Yes	Yes	89.51923077	3.32	55	15	Part L2 - SBEM	Other (provide details in column T)	Part L2 SBEM
Total	624	2071.68	55860	0	0	0	0	0	0	0									

Part L 2021 Performance

Residential

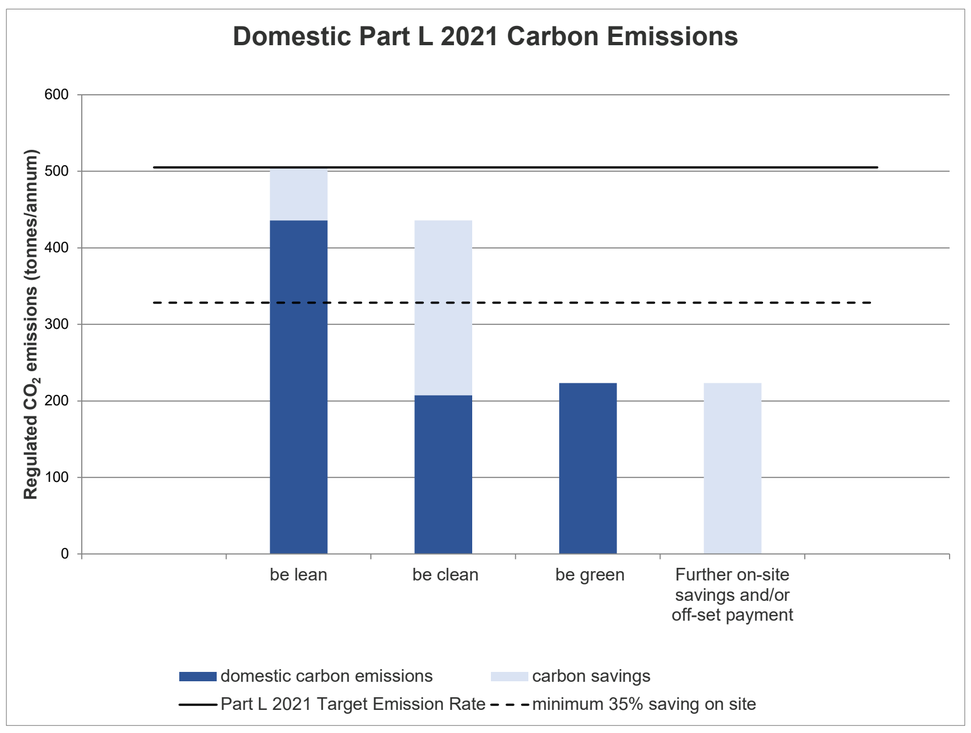
Table 1: Carbon Dioxide Emissions after each stage of the Energy Hierarchy for residential buildings

	Carbon Dioxide Emissions for residential buildings (Tonnes CO_2 per annum)	
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	505.1	181.7
After energy demand reduction (be lean)	436.0	181.7
After heat network connection (be clean)	207.2	181.7
After renewable energy (be green)	223.1	181.7

Table 2: Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for residential buildings

	Regulated residential carbon dioxide savings	
	(Tonnes CO_2 per annum)	(%)
Be lean: savings from energy demand reduction	69.1	14%
Be clean: savings from heat network	228.8	45%
Be green: savings from renewable energy	-15.8	-3%
Cumulative on site savings	**282.0**	**56%**
Annual savings from off-set payment	223.1	-
	(Tonnes CO_2)	
Cumulative savings for off-set payment	**6,693**	-
Cash in-lieu contribution (£)	**635,791**	

*carbon price is based on GLA recommended price of £95 per tonne of carbon dioxide unless Local Planning Authority price is inputted in the 'Development Information' tab



Non-residential

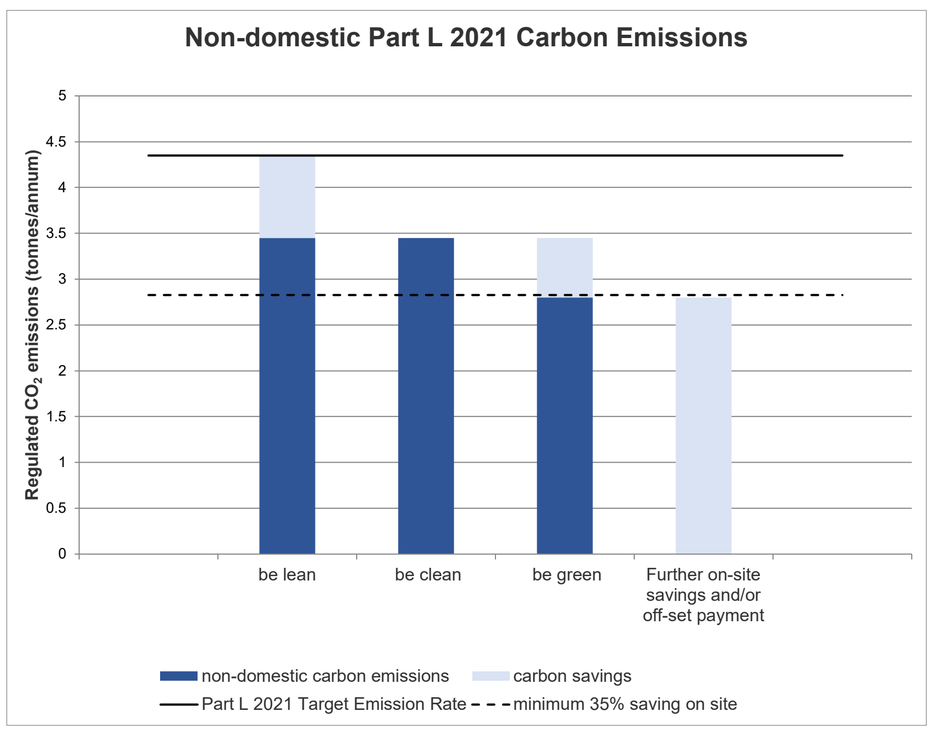
Table 3: Carbon Dioxide Emissions after each stage of the Energy Hierarchy for non-residential buildings

	Carbon Dioxide Emissions for non-residential buildings (Tonnes CO_2 per annum)	
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	4.3	33.7
After energy demand reduction (be lean)	3.5	33.7
After heat network connection (be clean)	3.5	33.7
After renewable energy (be green)	2.8	33.7

Table 4: Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for non-residential buildings

	Regulated non-residential carbon dioxide savings	
	(Tonnes CO_2 per annum)	(%)
Be lean: savings from energy demand reduction	0.9	21%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	0.6	15%
Total Cumulative Savings	**1.5**	**36%**
Annual savings from off-set payment	2.8	-
	(Tonnes CO_2)	
Cumulative savings for off-set payment	**84**	-
Cash in-lieu contribution (£)	**7,985**	

*carbon price is based on GLA recommended price of £95 per tonne of carbon dioxide unless Local Planning Authority price is inputted in the 'Development Information' tab



SITE-WIDE

	Total regulated emissions (Tonnes CO_2 / year)	CO_2 savings (Tonnes CO_2 / year)	Percentage savings (%)
Part L 2021 baseline	509.5		
Be lean	439.5	70.0	14%
Be clean	210.7	228.8	45%
Be green	225.9	-15.2	-3%
Total Savings	-	283.6	56%
	-	**CO_2 savings off-set (Tonnes CO_2)**	-
Off-set	-	**6,776.6**	-

	Target Fabric Energy Efficiency (kWh/m²)	Dwelling Fabric Energy Efficiency (kWh/m²)	Improvement (%)
Development total	30.76	29.04	6%

	Area weighted non-residential cooling demand (MJ/m^2)	Total non-residential cooling demand (MJ/year)
Actual	139.6	96,572.49
Notional	164	113,451.90

EUI & space heating demand (predicted energy use)

Residential

Building type	EUI (kWh/m^2/year) (excluding renewable energy)	Space heating demand (kWh/m^2/year) (excluding renewable energy)	EUI value from Table 4 of the guidance (kWh/m^2/year) (excluding renewable energy)	Space heating demand from Table 4 of the guidance(kWh/m^2/year) (excluding renewable energy)	Methodology used (e.g. 'be seen' methodology or an alternative predictive energy modelling methodology)	Explanatory notes (if expected performance differs from the Table 4 values in the guidance)
Residential	71.6256045	11.2158852	35	15	Part L1 - SAP 10.2 & none dwellings / & Landlord Circulation	

Non-residential

Building type	EUI (kWh/m^2/year) (excluding renewable energy)	Space heating demand (kWh/m^2/year) (excluding renewable energy)	EUI value from Table 4 of the guidance (kWh/m^2/year) (excluding renewable energy)	Space heating demand from Table 4 of the guidance(kWh/m^2/year) (excluding renewable energy)	Methodology used (e.g. 'be seen' methodology or an alternative predictive energy modelling methodology)	Explanatory notes (if expected performance differs from the Table 4 values in the guidance)
All other non-residential	89.51923077	3.32	55	15	Part L2 - SBEM & Other (provide details in column T)	Part L2 SBEM

Transport for London

Our ref: MERT/23/3
Your ref: 22/P3620

[redacted] of Merton
Merton Civic Centre
London Road
Morden
Surrey SM4 5DX

Transport for London
City Planning

5 Endeavour Square
Westfield Avenue
Stratford
London E20 1JN

Phone 020 7222 5600
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15th January 2024

Dear [redacted]

22/P3620; Mitcham Gasworks site, Western Road, LB Merton – TfL's AMENDED SCHEME updated comments

This letter updates TfL's position on the redevelopment of the Mitcham Gasworks site (22/P3620) located within the London Borough of Merton.

TfL set out its initial position within the Mayor's Stage 1 report dated 20th March 2023 and within detailed comments to the borough dated 21st March 2023, and updated comments dated 6th May 2023. These comments should be read in conjunction with these reports.

Proposed Development
Since the December 2022 planning application submission, an amended application has been submitted. Key [redacted] which impact on transport are as following:

- 579 residential units (-16 units)'
- 287sqm flexible commercial/community floorspace (-76sqm)
- 147 car parking spaces (+9).

Healthy Streets
TfL have no further comments.

Vehicular Access
TfL have no further comments.

Car parking
A 147 car parking spaces are proposed for the amended scheme. This represents an uplift in 9 car parking spaces compared to the original scheme. Whilst the residential car parking ratio for the amended scheme still accords

with London Plan Policy T6.1, there is no explanation as to why the car parking has increased given the number of residential units has decreased. It is not clear if there will be any [redacted] to the disabled car parking provision and this should be clarified.

Cycle Parking
It is noted that cycle stores have been broken down into smaller areas to improve security. TfL have no further comments.

Trip Generation
TfL have no further comments.

Service Vehicle Trip generation
TfL have no further comments.

Buses
As previously identified, the uplift in bus trips on route 152 would require one additional return journey. The cost of the additional return journey is £95,000 over 5 years. Therefore, a total contribution request of £475,000 is required to be secured. It is noted that this is secured in the draft s106 Heads of Terms.

Summary
I trust this provides you with an understanding of TfL's current position on the amended scheme.

Please do not hesitate to contact me if you have any queries. I look forward to discussing these with you and the applicant.

Yours sincerely,

[redacted]
Principal Technical Planner – TfL Spatial Planning
[redacted]

Mitcham Gasworks

Ecological Assessment
Prepared by Ecology Solutions

December 2023

St William
Designed for life

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ST WILLIAM HOMES LLP

ECOLOGYSOLUTIONS

Part of the ES Group

LAND AT
MITCHAM GASWORKS,
49 WESTERN ROAD,
LONDON,
CR4 3ED

Ecological Assessment

December 2023
9740.EcoAss.vf6

ecology solutions for
planners and developers

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PLAN ECO1	Application Site Location and Ecological Designations
PLAN ECO2(A)	Ecological Features (Summer 2021)
PLAN ECO2(B)	Ecological Features (Summer 2023)
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APPENDICES

APPENDIX 1	Habitat Retention Feasibility Statement
APPENDIX 2	Information Obtained from GiGL (Summary Page)
APPENDIX 3	Information Obtained from MAGIC
APPENDIX 4	Technical Note: Invertebrate Scoping Survey (Ecology Solutions, July 2023)
APPENDIX 5	Technical Note: Terrestrial Invertebrate Survey Report (Ecology Solutions, November 2023)
APPENDIX 6	Site Photographs (June 2021)
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APPENDIX 8	Wimbledon Common SAC Citation and Standard Data Form
APPENDIX 9	Wimbledon Common SSSI Citation

APPENDIX 10	Biodiversity Net Gain Assessment (Summary Sheet) [Excel spreadsheet provided separately]
APPENDIX 11	Biodiversity Net Gain Assessment (Condition Assessment Information)
APPENDIX 12	Suitable Examples of Bird Boxes

1. INTRODUCTION

1.1. Background & Proposals

1.1.1. Ecology Solutions Limited was commissioned in June 2021 by St William Homes LLP to undertake an Ecological Assessment of Land at Mitcham Gasworks, 49 Western Road, London, CR4 3ED hereafter referred to as the application site (see Plan ECO1).

1.1.2. The proposals for the application site are for the erection of new buildings to provide residential accommodation (Class C3) and flexible commercial/community space (Class E and/or Class F2), with associated access, parking and landscaping arrangements, including the demolition of the existing telecommunications mast and re-provision of new telecommunications mast.

1.2. Application Site Characteristics

1.2.1. The application site is approximately 2.43ha in size and sits within the Lavender Fields Ward, located in the London Borough of Merton. It is bounded by Portland Road to the northwest, open space with Hay Drive beyond to the west, Field Gate Lane to the southeast and Western Road to the northeast.

1.2.2. To the northeast, across Western Road, is a large Asda supermarket and surface car park with industrial uses beyond. To the east is the Sadler Close estate, rising to six storeys. To the southeast are two to four storey homes. To the southwest of the site lies a development that completed in 2014 and was formerly part of the gasworks. It is now a series of residential apartments and houses ranging from two to four storeys. To the northwest of the site, across Portland Road, are two storey homes.

1.2.3. The site was formerly in use as a gasworks by National Grid, with a large gasholder in the northern corner of the site. The gasholder frame was demolished in 2021 under prior approval 20/P0703. The main access to the site is via Western Road, with a secondary entrance off Portland Road. The existing site contains a telecommunications mast and two pressure reduction stations (PRS). A number of underground gas mains run across the site, with some requiring diversion to facilitate redevelopment.

1.2.4. The site is otherwise vacant, with high walls or fences around all boundaries. No public access is possible and the site acts as a barrier to the permeability of the area. The nature of the sites boundaries also contributes to an unattractive and uninviting environment along the routes that run adjacent to the site, including Portland Road, Western Road and Field Gate Lane.

1.3. Ecological Assessment

1.3.1. This document assesses the ecological interest of the application site as a whole. The importance of the habitats present is evaluated with regard to

current guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM)[1].

1.3.2. The report also sets out the existing baseline conditions for the application site, setting these in the correct planning policy and legal framework and assessing any potential impacts which may occur from the proposed development. Appropriate mitigation where necessary is identified such that it will offset negative impacts of the proposals, and where possible provide for the ecological enhancement of the application site, in accordance with relevant planning policy.

1.3.3. Following the completion of further survey and assessment work in 2023 (post-submission), this document represents an updated version of the Ecological Assessment. The intention of this document is to provide a comprehensive update regarding the current ecological baseline present at the application site (including any [redacted] which have occurred since the planning application was submitted in December 2022), and provides clarity regarding the avoidance, mitigation and enhancement measures which are proposed as part of the new development. Further justification and clarification is also provided to address specific matters which have been raised in respect of ecology and nature conservation in consultation responses to the planning application.

1.3.4. As such, this document supersedes the previous version of the Ecological Assessment report (reference 9740.EcoAss.vf3), dated May 2023, and also incorporates detail provided in the Ecological Assessment Addendum dated July 2023 (reference 9740.EcoAsstAddendum.vf).

1.3.5. This report should also be read in conjunction with the Habitat Retention Feasibility Statement, a copy of which is included at Appendix 1. This document, which was prepared by St William, Ecology Solutions and WSP, represents a detailed assessment in relation to the feasibility of habitat retention at the application site (specifically in relation to Open Mosaic Habitat), and is therefore pertinent to this assessment.

[1] CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.2*. Updated April 2022. Chartered Institute of Ecology and Environmental Management, Winchester.

2. SURVEY METHODOLOGY

2.1. The methodology utilised for the survey work can be split into three areas, namely desk study, habitat survey and faunal survey. These are discussed in more detail below.

2.2. Desk Study

2.2.1. To compile background information on the application site and its immediate surroundings, Ecology Solutions contacted Greenspace Information for Greater London (GiGL).

2.2.2. Information has been provided by GiGL. Due to publication conditions, the full report from the record centre cannot be appended to this assessment; however, a summary page is provided at Appendix 2. Desk study information is referenced throughout this report, where appropriate. Information regarding designated sites is also shown on Plan ECO1.

2.2.3. Further information on designated sites from a wider search area was also obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC)[2] database. This information is reproduced at Appendix 3 and where appropriate on Plan ECO1.

2.2.4. An updated desk study was undertaken in June 2023 to ensure that all up to date background records of designated sites and faunal species had been collated.

2.3. Habitat Survey

2.3.1. Survey work was originally undertaken on 29 June 2021 to ascertain the general ecological value of the application site and to identify the main habitats and associated plant species situated within and in close proximity to the application site boundary.

2.3.2. The application site was surveyed based around the extended Phase 1 survey methodology[3], as recommended by Natural England, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail.

2.3.3. Using the above method, the application site was classified into areas of similar botanical community types, with a representative species list compiled for each habitat identified.

2.3.4. An updated habitat survey was undertaken on 12 June 2023 to ascertain any [redacted] to the extent and types of habitats present within the application site boundary since the June 2021 survey, with a particular focus on the identification and assessment of Open Mosaic Habitats.

[2] MAGIC website. Available at: http://magic.defra.gov.uk
[3] Joint Nature Conservation Committee (2010). *Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit*. England Field Unit, Nature Conservancy Council, reprinted JNCC, Peterborough.

2.3.5. All the species that occur in each habitat would not necessarily be detectable during survey work carried out at any given time of the year, since different species are apparent at different seasons. However, considering the developed nature of the application site, and that the surveys were undertaken within the optimal season, it is considered that an accurate and robust assessment has been made of the botanical interest that it supported both in June 2021 and June 2023.

2.4. Faunal Survey

2.4.1. General faunal activity observed during the course of the survey was recorded, whether visually or by call. Specific attention was paid to the presence or potential presence of any protected, rare, notable or Priority Species, and the extent to which the application site provides any potential opportunities for these species / groups. In addition, specific surveys were undertaken in respect of bats.

2.4.2. **Bats.** A comprehensive internal and external inspection survey was undertaken on 29 June 2021 to assess the potential of existing trees, buildings and structures within and immediately adjacent to the application site to support roosting bats. This work was undertaken by experienced bat workers and aimed to establish the likelihood of presence / absence of bats.

2.4.3. Field surveys were undertaken with regard to best practice guidelines issued by Natural England (2004[4]), the Joint Nature Conservation Committee (2004[5]) and the Bat Conservation Trust (2016[6]).

2.4.4. A detailed external survey was undertaken of all buildings and structures within and adjacent to the application site, to identify any potential access points or features which could potentially be utilised by roosting bats.

2.4.5. The probability of a building being used by bats as a summer roost site increases if it:

- is largely undisturbed;
- dates from pre 20th Century;
- has a large roof void with unobstructed flying spaces;
- has access points for bats (though not too draughty);
- has wooden cladding or hanging tiles; and
- is in a rural setting and close to woodland or water.

2.4.6. Conversely, the probability decreases if a building is of a modern or pre-fabricated design / construction, is in an urban setting, has small or cluttered roof voids, has few gaps at the eaves or is a heavily disturbed premises.

2.4.7. The main requirements for a winter / hibernation roost site is that it maintains a stable (cool) temperature and humidity. Sites commonly utilised by bats as winter roosts include cavities / holes in trees, underground sites and parts

[4] Mitchell-[redacted] A. J. (2004). *Bat Mitigation Guidelines*. English Nature, Peterborough.
[5] Mitchell-[redacted] A.J. & McLeish, A.P. (Eds.) (2004). *Bat Workers' Manual*. 3rd edition. Joint Nature Conservation Committee, Peterborough.
[6] Collins, J. (Eds.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition)*. Bat Conservation Trust, London.

of buildings. Whilst different species may show a preference for one of these types of roost site, none are solely dependent on a single type.

2.4.8. In addition, trees present within and immediately adjacent to the application site were assessed for their potential to support roosting bats. For a tree to be classed as having some potential for roosting bats it must usually have one or more of the following characteristics:

- obvious holes, e.g. rot holes and old woodpecker holes;
- dark staining on the tree below a hole;
- tiny scratch marks around a hole from bats' claws;
- cavities, splits and/or loose bark from broken or fallen branches, lightning strikes etc.; and/or
- very dense covering of mature Ivy *Hedera helix* over trunk.

2.4.9. Consideration was also afforded to the habitats present within and adjacent to the application site in terms of the potential opportunities that they provide for foraging and commuting bats in the local area.

2.4.10. An updated appraisal in relation to bats was undertaken in conjunction with the walkover survey in June 2023.

2.4.11. **Other Faunal Species**. Consideration was also afforded to opportunities that the application site provides for protected and notable faunal species in the local area, with regard afforded to the geographical context of the site and adjoining land uses.

2.4.12. **Invertebrates.** A detailed invertebrate scoping appraisal survey was undertaken on 22 June 2023, in light of consultation responses regarding opportunities for invertebrate species and assemblages. The methodology used for the scoping survey is outlined in the standalone report included at Appendix 4 of this Assessment.

2.4.13. Subsequently, detailed terrestrial invertebrate surveys were undertaken at the application site in August and September 2023 to provide further information and detail regarding the use of the application site by this group. A range of sampling methodologies were utilised, with work undertaken by an experienced entomologist. The survey methodology is outlined in the standalone report included at Appendix 5 of this Assessment.

3. ECOLOGICAL FEATURES

3.1. The application site was subject to an ecological survey on 29 June 2021. The vegetation present enabled the habitat types to be satisfactorily identified and an accurate assessment of the ecological interest of the habitats to be undertaken.

3.2. As outlined above, updated survey work was undertaken on 12 June 2023 to ascertain any [redacted] to the extent and types of habitats present within the application site.

3.3. The following paragraphs summarise the findings of survey work undertaken in June 2021 (prior submission of the application) and June 2023 (post-submission).

June 2021

3.4. The following main habitat types were identified within the application site during the survey completed in June 2021:

- Hardstanding / Sparsely Vegetated Ground with Ephemeral and Ruderal Vegetation;
- Species-poor Grassland;
- Scrub; and
- Existing Buildings / Structures.

3.5. The location of these habitats is shown on Plan ECO2(A). Each habitat present is described below with an account of its representative plant species (where relevant). Photographs of the habitats present within the application site from June 2021 are included at Appendix 6.

3.6. Hardstanding / Sparsely Vegetated Ground with ephemeral and ruderal vegetation

3.6.1. The majority of the application site was recorded to comprise areas of existing hardstanding (tarmac and gravel) and bare ground. As shown on ECO2A, at the time of survey it was apparent that works had recently been undertaken in the northern and central parts of the application site; however, it is clear from analysis of historical aerial imagery that this has been the predominant habitat type present at the application site over the past decade, following the demolition of former buildings and associated infrastructure between 2006 and 2010.

3.6.2. The vast majority of these areas were recorded to be devoid of vegetation at the time of survey, although where there has been less disturbance such as at the periphery some of the pioneering and recolonising species as outlined below were recorded to be present.

3.7. Species-poor Grassland

3.7.1. As outlined on Plan ECO2, an area of species-poor grassland with ruderal vegetation was recorded to be present in the south-eastern and south-western parts of the application site in June 2021. It is apparent that these areas have only recently become established, with aerial imagery from 2006 showing these areas as buildings, car parks and roads and photography

from as late as 2015 showing these areas to be completely devoid of vegetation.

3.7.2. A range of common and widespread species were recorded within these areas during the course of the survey. Species present include Yorkshire-fog *Holcus lanatus*, Perennial Rye-grass *Lolium perenne*, False Oat-grass *Arrhenatherum elatius*, Creeping Bent *Agrostis stolonifera*, Cock's-foot *Dactylis glomerata*, Common Mouse-ear *Cerastium fontanum*, Sow-thistle *Sonchus* sp., Sainfoin *Onobrychis viciifolia*, Purple Toadflax *Linaria purpurea*, Black Medick *Medicago lupulina*, Dandelion *Taraxacum officinale* agg., Ribwort Plantain *Plantago lanceolata*, Bristly Ox-tongue *Helminthotheca echioides*, Perforate St John's-Wort *Hypericum perforatum*, Curled Dock *Rumex crispus*, Selfheal *Prunella vulgaris*, Red Valerian *Centranthus ruber*, Broadleaved Dock *Rumex obtusifolius*, White Clover *Trifolium repens*, Creeping Cinquefoil *Potentilla reptans*, Willowherbs *Epilobium sp.*, Herb-Robert *Geranium robertianum*, Lamb's-ear *Stachys byzantina*, Soft-rush *Juncus effusus* and Common Poppy *Papaver rhoeas*.

3.8. Scrub

3.8.1. An area of scrub and immature trees was recorded to be present in the east of the application site (adjacent to Western Road), with scattered scrub also present in central and western areas. Species present include Cherry *Prunus* sp., Bramble *Rubus fruticosus* agg., White Poplar *Populus alba*, Cherry Laurel *Prunus laurocerasus*, Willows *Salix* sp. and Butterfly-bush *Buddleja davidii*.

3.9. Existing Buildings / Structures

3.9.1. The application site supports a limited number of existing buildings and structures. These are illustrated on Plan ECO2A and described below.

3.9.2. At the time of the survey B1 comprised the former gasholder in the north of the application site. This structure featured significant above ground infrastructure, with only the top of the gasholder visible from the surface. The gasholder is surrounded by a metal frame. Since the survey the gasholder frame has been demolished (see below).

3.9.3. B2 comprises a tall metal pylon telecommunications mast in the central part of the application site.

3.9.4. B3 is a small brick substation located adjacent to B2 in the centre of the application site, with a flat concrete roof.

3.9.5. B4 is also situated in the centre of the application site and comprises a small storage building with pebble dash walls and a pitched corrugated roof. The structure was boarded up preventing any internal access.

3.9.6. B5 comprises a small metal substation located in the eastern part of the application site close to Western Road.

3.9.7. Additional structures present include a PRS located in the centre of the application site and a gas governor along Western Road in the north-east.

June 2023

3.9.8. Updated habitat survey work undertaken in June 2023 identified a number of [redacted] which have arisen. The [redacted] have occurred following disturbance associated with the completion of the remediation works in late 2021 (i.e. after the survey was undertaken) and also disturbance and fly-tipping associated with the temporary use of the application site by travellers in Summer and November 2022, with subsequent recolonisation of areas of bare ground.

3.9.9. Further detail regarding the recent history of the application site (since 2012) is set out in Section 2 of the Habitat Retention Feasibility Statement (Appendix 1).

3.9.10. These [redacted] are illustrated on Plan ECO2(B), which also takes into account the findings of the detailed invertebrate survey work undertaken subsequently in August and September 2023 (see below). Photographs of the habitats present within the application site boundary taken in June 2023 are included at Appendix 7 of this Assessment.

3.9.11. The updated survey identified that some of the areas originally identified to support bare ground in 2021 have been subject to recolonisation by ruderal and pioneer species. As a result, the survey identified that as of Summer 2023 there are now areas of vegetation which broadly conform to the description of 'Open Mosaic Habitat' within parts of the site. These areas comprise a mosaic of bare ground of various substrates (including bare earth, gravel and brick piles), in addition to scattered grass and herbaceous species.

3.9.12. However, areas within the northern and central parts of the application site were recorded to comprise either hardstanding (in the form of tarmac or concrete) or compacted bare ground with very little if any recolonising species. Whilst areas of bare ground provide some limited opportunities for invertebrate species (see below), the botanical value of these areas is evidently very limited indeed.

3.9.13. Moreover, extensive areas in the southern part of the application site are dominated by areas of established dry grassland. Areas of dry grassland have also rapidly established in the central part of the application site. These habitats are clearly distinct from the more varied and comparatively more diverse mosaic vegetation, which represents transitional zones between grassland and some adjoining areas of bare ground. Whilst the grassland habitats present within the application site support a range of botanical species, they are in the main species-poor, comprising a complement of common and widespread botanical species.

3.9.14. Similarly, the survey confirmed the presence of areas of both dense and scattered scrub within the application site. This includes areas of dense Bramble scrub associated with the south-eastern boundary, in addition to more varied scrub in the east and north-west and encroaching Buddleja scrub throughout. The extent and distribution of scrub was recorded to have increased since 2021, indicating succession.

3.9.15. The updated survey confirmed that the application site continues to support a couple of small buildings and structures. However, the large gas holder

previously recorded in the northern part of the application (B1) was recorded to have been demolished, resulting in an area of bare ground with some scattered ruderal vegetation and scrub primarily associated with the periphery of this feature.

3.9.16. In light of the detailed invertebrate survey work undertaken in August and September 2023, the current extent of Open Mosaic Habitat present within the application site (i.e. as of Summer 2023) has therefore been assessed as shown on Plan ECO2(B).

Position as of December 2022 (estimated)

3.9.17. Given that survey work undertaken in 2021 and 2023 identified that there has been significant [redacted] in terms of the extent and composition of habitats present within the application site boundary, consideration has been afforded to the likely baseline position at the time of submission of the application in December 2022.

3.9.18. This is pertinent to the consideration of the pre-development baseline value of the site in the context of Biodiversity Net Gain (BNG), noting that the 'relevant date' as outlined in the Environment Act 2021 pertains to the date of the application (notwithstanding the fact that this is not a mandatory requirement, as outlined below).

3.9.19. Plan ECO2(C) represents the estimated baseline position with regard to habitats present within the application site at the time of the submission of the planning application in December 2022. This plan has been produced by an experienced ecologist familiar with the application site and the findings of both the 2021 and 2023 survey work, in consultation with the invertebrate specialist who undertook the August and September 2023 survey work.

3.9.20. The plan represents professional judgment based on knowledge of the site from the surveys in addition to the following:

- Analysis of aerial imagery over the period of 2021 to 2023, with regard to [redacted] occurring at the site between 2012 and 2021 for context;
- Site photography over the period, illustrating site works in late 2021 and early 2022 including areas subject to habitat removal (haul road) and disturbance (regular or occasional); and
- Site photography illustrating the damage and fly tipping associated with the illegal occupation of the site by travellers in early Summer 2022 and November 2022; and
- Professional judgment regarding the implications arising from activity on the site in terms of opportunities for invertebrates.

3.9.21. Given the significant levels of compaction and disturbance to areas of bare ground from the illegal use and fly tipping (including the subsequent removal of waste from the site), areas of bare ground in the most disturbed parts of the site would not have been available for use by invertebrate species. Nonetheless, following the cessation of works it is anticipated that an area of Open Mosaic Habitat would have been present at the time of the

submission of the application, with its likely extent illustrated on Plan ECO2(C).

3.10. Background Records

3.10.1. The desk studies undertaken from GiGL did not return any records of protected or notable plant species from the application site or immediate vicinity. The majority of information returned related to historical records (pre-2000).

3.10.2. The closest recent record of a notable plant species pertained to Box *Buxus sempervirens* returned from a location approximately 0.8km to the south-east of the application site from 2006.

3.10.3. No protected or notable botanical species were recorded to be present within or adjacent to the application site during the survey work undertaken and given the developed nature of the site and the paucity of habitats (in botanical terms) it is considered that none are likely to be present.

4. WILDLIFE USE OF THE APPLICATION SITE

4.1. During the survey work, general observations were made with specific attention paid to the potential presence of protected species. Specific surveys were also undertaken in respect of bats.

4.2. Bats

4.2.1. All existing buildings and structures present within the application site were assessed for their potential to support roosting bats in June 2021, in addition to all trees present within and immediately adjacent to the application site.

4.2.2. None of the existing buildings or structures were considered to provide any potential opportunities for roosting bats, on account of their construction and the absence of any potential access points. In addition, there are no trees present within or in close proximity to the application site which have developed features of potential interest for this group, such as cracks, splits, holes or a dense covering of Ivy.

4.2.3. As such, there are no features present within or adjacent to the application site which could be used by roosting bats.

4.2.4. An updated appraisal was undertaken in June 2023 which confirmed that there remain no potential features of interest for roosting bats within or in close proximity to the application site.

4.2.5. The application site is surrounded by existing development, with residential development to the northwest, southeast, and southwest and a supermarket to the northeast. The habitats present within the application site itself are highly unlikely to be of significant value for foraging or commuting bats in the local area, given the paucity of semi-natural habitats within the application site boundary, the geographical context of the site and the presence of existing street lighting along Western Road and Portland Road, which bound the application site to the northeast and northwest respectively.

4.2.6. Moreover, the application site is separated from more extensive dark areas in the local area (such as Mitcham Common to the east), such that any bats utilising the application site for foraging could only access it having traversed areas with high lightspill.

4.2.7. **Background Records.** The data searches from GiGL did not return any records of bats from within or immediately adjacent to the application site. The closest records returned were of Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus* and Noctule *Nyctalus noctule* returned from approximately 0.8km south-west from 2008.

4.2.8. Other bat species returned from the wider search area (beyond 0.8km) included Serotine *Eptesicus serotinus*, Daubenton's Bat *Myotis daubentoniid,* Natterer's Bat *Myotis nattereri,* Lesser Noctule *Nyctalus leisleri*, Brown Long-eared *Plecotus auritus* and Nathusius' Pipistrelle *Pipistrellus nathusii.*

4.3. Other Mammals

4.3.1. No evidence to indicate the use of the application site by mammals was recorded during the course of survey work undertaken in 2021. However, the updated survey in June 2023 recorded evidence in the form of mammal pathways, with anecdotal evidence of a Foxes *Vulpes vulpes* earth. Moreover, the habitats present within the application site may provide superficially suitable habitat for Hedgehogs.

4.3.2. **Background records.** No records of notable or protected mammal species were noted within or directly adjacent to the application site. A couple of Water Vole *Arvicola amphibius* records were also returned over 1km from the application site from 2016.

4.4. Birds

4.4.1. The habitats present within the application site offer very limited opportunities for birds, with the small areas of scrub providing some suitable habitat for nesting and areas of Open Mosaic Habitat, recolonising grassland and scrub providing some opportunities for foraging. However, the areas of hardstanding and bare ground which comprise the vast majority of the application site provide negligible opportunities for this group.

4.4.2. During the survey work undertaken in June 2021, a House Sparrow *Passer domesticus* was recorded flying over the site. No other bird species were recorded during the course of the survey.

4.4.3. Subsequent survey work undertaken in 2023 identified the continued presence of House Sparrows (likely to be breeding on site), with records of other species noted including Goldfinch *Carduelis carduelis*, Linnet *Linaria cannabina* and Stock Dove *Columba oenas*. Given the specific presences and requirements of each of these species, it is considered that use of the application site by these birds is indicative of irregular use for foraging or passing through, as opposed to breeding.

4.4.4. **Background Records.** The data search received from GiGL did not return any records of notable birds from within the application site. The nearest records of notable bird species comprised Swift *Apus apus* from a location approximately 0.4km to the west from 2012.

4.4.5. Other notable species returned from within the wider area include Kingfisher *Alcedo atthis*, Bewick's Swan *Cygnus columbianus*, Whooper Swan *Cygnus cygnus*, Little Egret *Egretta garzetta*, Mediterranean Gull *Ichthyaetus melanocephalus,* Red Kite *Milvus milvus,* Spotted Crake *Porzana porzana*, Common Turn *Sterna hirundo*, Arctic Turn *Sterna paradisaea* and Mistle Thrush *Turdus viscivorus.*

4.5. Invertebrates

4.5.1. As outlined above, updated survey work undertaken in 2023 identified that the application site supports Open Mosaic Habitat, representing a material [redacted] since the original survey was undertaken in June 2021. Detailed invertebrate survey work was therefore undertaken in August and September 2023 to ascertain the assemblages of invertebrates present within the application site, in order to quantify the 'value' of the habitat and

identify whether the application site supports protected, rare or notable invertebrate species and assemblages.

4.5.2. The findings of the detailed invertebrate survey work are set out in the Terrestrial Invertebrate Survey Report included at Appendix 5 of this Assessment.

4.5.3. In summary, survey work has duly confirmed the presence of Open Mosaic Habitat within the site. However, assessment of the assemblage of species recorded indicates that the site would only be of elevated interest in respect of two sub components of the OMH (bare ground and rich flower resource), and in both cases it is considered to be in unfavourable condition based on the species recorded.

4.5.4. Further consideration in relation to the findings of this detailed survey work undertaken in Summer 2023, in the context of the baseline situation at the time of submission of the planning application (December 2022), is provided in Section 5 below. However, it is axiomatic based on the [redacted] to habitat composition at the application site that the baseline situation with regard to invertebrates as assessed from the 2023 survey work would have improved since the application was submitted.

4.5.5. **Background Records.** The data search received from GiGL did not return any records from within or immediately adjacent to the application site. Multiple records of Stag Beetle *Lucanus cervus* were returned from 0.3km south-west of the application site with the most recent record being in 2016. The desk study also returned a record of Common Darter *Sympetrum striolatum*, approximately 0.9km to the south-east from 2022.

4.6. Reptiles and Amphibians

4.6.1. Areas of bare ground and the dry grassland in the southern part of the application site provides superficially suitable habitat for reptile species within the application site. However, no reptiles were recorded within the site during any of the survey visits, either undertaken as part of the habitat surveys (in June 2021 or June 2023) or the detailed invertebrate surveys (in August and September 2023).

4.6.2. As outlined in detail in Section 2 of the Habitat Retention Feasibility Statement (Appendix 1), aerial imagery from 2012 and 2013 illustrates that the application site and the adjoining land to the west were completely devoid of any suitable reptile habitat at that time, with the application site used as a works compound for the adjoining Lavender Gardens development. As such, the likelihood of the application site being colonised by reptiles is considered to be exceptionally low given that adjoining habitats have only recently become established (i.e. those adjacent to Hay Drive to the south-west of the application site boundary) or because they are very small in size (e.g. Mitcham Orchard and allotments to the south-east).

4.6.3. There are no waterbodies present within or in close proximity to the application site which could potentially support breeding amphibian species.

4.6.4. As such, it is considered highly unlikely that the application site would support either reptile or amphibian species. No further consideration has therefore been afforded to these groups within this Ecological Assessment.

4.6.5. **Background records.** The desk study undertaken with GiGL did not identify any records of reptiles or amphibians from the application site.

4.6.6. The desk study identified a record of Grass Snake *Natrix helvetica* from a location approximately 0.6km to the north-east from 2013, with records of Slow-worm *Anguis* fragilis and Common Lizard *Zootoca vivpara* also returned from the local area. The desk study also identified a record of Great Crested Newt *Triturus cristatus* from a location approximately 0.9km to the south east from 2019

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5. ECOLOGICAL EVALUATION

5.1. The Principles of Ecological Evaluation

5.1.1. The latest guidelines for ecological evaluation produced by CIEEM proposes an approach that involves professional judgement, but makes use of available guidance and information, such as the distribution and status of the species or features within the locality of the project.

5.1.2. The methods and standards for site evaluation within the British Isles have remained those defined by Ratcliffe[7]. These are broadly used across the United Kingdom to rank sites so priorities for nature conservation can be attained. For example, current sites of Special Scientific Interest (SSSI) designation maintains a system of data analysis that is roughly tested against Ratcliffe's criteria.

5.1.3. In general terms, these criteria are size, diversity, naturalness, rarity and fragility, while additional secondary criteria of typicalness, potential value, intrinsic appeal, recorded history and the position within the ecological/geographical units are also incorporated into the ranking procedure.

5.1.4. Any assessment should not judge sites in isolation from others, since several habitats may combine to make it worthy of importance to nature conservation.

5.1.5. Further, relying on the national criteria would undoubtedly distort the local variation in assessment and therefore additional factors need to be taken into account, e.g. a woodland type with a comparatively poor species diversity, common in the south of England, may be of importance at its northern limits, say in the border country.

5.1.6. In addition, habitats of local importance are often highlighted within a local Biodiversity Action Plan (BAP). The Merton Biodiversity Action Plan identifies and lists several priority species and habitats.

5.1.7. Levels of importance can be determined within a defined geographical context from the immediate site or locality through to the international level.

5.1.8. The legislative and planning policy context has also been given due regard throughout this assessment.

5.2. Designated Sites

Statutory Sites

5.2.1. There are no statutory designated sites of nature conservation within or adjacent to the application site. The nearest statutory designated site is Myrna Close Local Nature Reserve (LNR), which is situated approximately 0.9km to the north of the application site boundary at its closest point (see Plan ECO1).

[7] Ratcliffe, D A (1977). *A Nature Conservation Review: the Selection of Study areas of Biological National Importance to Nature Conservation in Britain*. Two Volumes. Cambridge University Press, Cambridge.

5.2.2. Myrna Close LNR is described as an important habitat for butterflies and birds and comprises a small area of land dominated by a mixture of native tree and scrub species.

5.2.3. The closest Site of Special Scientific Interest (SSSI) to the application site is Wimbledon Common SSSI, situated approximately 4km to the north-west of the application site boundary at its closest point (straightline distance; see Plan ECO1). This SSSI also underpins Wimbledon Common Special Area of Conservation (SAC).

5.2.4. Wimbledon Common SAC is designated on account of the presence of two Annex I habitats – European dry heaths and Northern Atlantic wet heaths with *Erica tetralix* – in addition to the presence of the Annex II species Stag Beetle *Lucanus cervus*. A copy of the SAC Citation and Standard Data Form are included at Appendix 8 of this assessment.

5.2.5. Wimbledon Common SSSI is designated for the extensive areas of heathland and acidic grassland habitats that the site supports. The SSSI Citation draws reference to considerable variation in habitat types present within the site, support notable assemblages of plant species which are uncommon in London which in turn provide opportunities for fauna such as breeding birds. A copy of the SSSI Citation is included at Appendix 9 of this assessment.

5.2.6. The application site is significantly separated from all statutory designated sites in the local area by extensive areas of existing development and infrastructure such as roads and railway lines. Moreover, the nature of the application site at present (previously development land) does not support any habitat that could be utilised by species associated with these designated sites. In addition, there are no identified pathways for an effect between the application site and the designated site (for instance, via hydrological routes).

5.2.7. Given the nature of the development proposals, it is therefore considered that the proposed development would not be likely to lead to any significant effect upon the designated sites (either considered alone or in combination with any other plans and projects).

5.2.8. In any event, standard engineering protocols and best practice will be adopted throughout the construction period, with measures adopted as required to mitigate for potential harm to off-site areas arising through noise, dust deposition and contaminated run-off. It is envisaged that further detail will be outlined in a Construction Environmental Management Plan (CEMP), which may be secured via a suitably worded planning condition as required.

Non-statutory Sites

5.2.9. There are no non-statutory designated sites of nature conservation within or immediately adjacent to the application site. The nearest non-statutory site is St Peter and St Paul Churchyard Site of Borough Grade II Importance for Nature Conservation (SBG2INC), situated approximately 0.3km to the south-west of the application site at its closest point (see Plan ECO1).

5.2.10. As illustrated on Plan ECO1, there are a number of other non-statutory designated sites situated within 1km of the application site, including the following:

- Mitcham Common Site of Metropolitan Importance for Nature Conservation (SMINC);
- Upper River Wandle SMINC;
- Morden Hall Park and Deen City Farm Site of Borough Grade I Importance for Nature Conservation (SBG1INC);
- Wandle Trail Nature Park and Lower River Wandle SBG1INC;
- London Road Playing Fields SBG2INC;
- Myrna Close Valley SBG2INC;
- Three Kings Pond and Commonside Rough Site of Local Importance for Nature Conservation (SLINC);
- Canons Pond SLINC; and
- Cranmer Green Local Nature Reserve SLINC.

5.2.11. The application site is separated from all of these designated sites by existing development and infrastructure. Given the nature of the proposals and with the implementation of standard engineering protocols and best practice throughout the construction period (as outlined above), it is considered that the development proposals will not result in any adverse effects to non-statutory designated sites in the local area.

5.2.12. Further assessment in relation to faunal species which are associated with these designated sites (e.g. Mitcham Common) is provided below under the relevant subheading.

5.3. Habitat Evaluation

5.3.1. As outlined in Section 3 above, large areas of the application site comprises areas of existing hardstanding and compacted bare ground, with a number of existing buildings and structures also present. These areas are typically devoid of vegetation and as such are not of any ecological value.

5.3.2. In addition, areas in the south-eastern and south-western parts of the application site are dominated by extensive blocks of species-poor grassland with ruderal vegetation, in addition to small areas of dense scrub. These habitats are clearly distinct from areas of Open Mosaic Habitat (see below), as they comprise uniform areas of grassland with little variation in sward height or botanical diversity. It is apparent that they have become established over a number of years, in some locations since the site was subject to full clearance in 2013, in areas which have not been subject to disturbance due to the gasholder removal and remediation works or the illegal occupation of the site by travellers.

5.3.3. These habitats support a very limited range of species, all of which are widespread and common both in a regional and indeed local context. As a result, these habitats are considered to be of very low value in terms of their botanical interest and indeed offer very limited opportunities for faunal species (see below).

5.3.4. Survey work undertaken in 2023 identified that the application site now supports areas of Open Mosaic Habitat, which was not previously recorded in the original survey undertaken in June 2021.

5.3.5. Open Mosaic Habitat is likely to have developed as a result of bare ground arising from disturbance from the gasholder demolition and removal works in late 2021 / early 2022 and the illegal use of the site by travellers in June and November 2022, which has subsequently been subject to recolonisation. In turn, following the cessation of intensive disturbance, this habitat has since been colonised by invertebrate species and assemblages.

5.3.6. At the first instance, it is therefore important to note that this is a habitat that has only recently developed at the site. This is supported by the findings of the June 2021 survey, in addition to the site history as set out in Section 2 of the Habitat Retention Feasibility Statement (Appendix 1).

5.3.7. Whilst a variety of flowering species are associated with this habitat (where it interfaces with the extensive blocks of grassland which have not been subject to disturbance in recent years), the Open Mosaic Habitat currently present within the application site includes, as a key element, smaller component areas of bare ground which are not of significant botanical interest.

5.3.8. In considering the value of the Open Mosaic Habitat, it is important to consider other factors which are pertinent to the opportunities that it provides for invertebrate species. This includes factors such as aspect, topography and the structure of the habitats present.

5.3.9. The majority of the application site comprises level or very gently sloping ground. Whilst there are some banks and slopes, such as to the south-west of the former gasholder, there is a distinct lack of variation in terms of microtopography through much of the application site.

5.3.10. Similarly, whilst the application site (if considered as a whole) supports areas of bare ground, sparse vegetation, dry grassland and scrub, there are no areas dominated by lichens or liverworts. Furthermore, survey work undertaken in 2023 did not identify any wetland features to be present (either permanent or temporary).

5.3.11. Detailed invertebrate survey work undertaken in 2023 has identified that whilst the application site currently supports assemblages indicating that it is of some elevated interest (in the context of a ‘typical’ development site), the value of this habitat in invertebrate terms would only be of Local significance, with these habitats (as of Summer 2023) in unfavourable condition.

5.3.12. As summarised in Section 3 above, at the time of submission of the planning application in December 2022, it is likely that Open Mosaic Habitat would have been present within the application site boundary, albeit with a slightly smaller extent compared to the current (2023) baseline. Moreover, on the basis that the application site was (essentially) devoid of vegetation as late as 2015, it is axiomatic that the invertebrate species which now utilise the application site, whether in passage or those which have colonised the site, could only have done so following the establishment of the Open Mosaic Habitat.

5.3.13. It is therefore reasonable to conclude that the invertebrate interest that the application site supports in Summer 2023 (as identified from the additional survey work undertaken this year) is likely to be greater than that at the time of the submission of the application, noting that the habitat would have matured further in the last year and that there would have been more time for mobile species to find the site from off-site locations. As such, the current value of the Open Mosaic Habitat present within the application site is greater than at the time of submission.

5.3.14. In the absence of any future intervention or disturbance, it is reasonable to anticipate that the habitats will continue to develop over time in line with the ecological process of succession. Indeed, this would explain the [redacted] of habitats at the application site as can be seen from aerial photography from April 2015 (cleared site) to May 2018 (beginning of recolonisation across the site). The extent of bare ground and recolonising vegetation is likely to reduce over time to become superseded initially by dry grassland (as has already occurred in the southern part of the application site), and in due course by scrub particularly Bramble and Buddleja. As a result, the structural and botanical diversity of the application site will essentially reduce over time, resulting in the reduction of, and ultimately the loss of, areas of Open Mosaic Habitat.

5.3.15. Whilst the timescales associated with this process will depend on a variety of factors, this process would certainly lead to the loss of the bare ground sub-component of the mosaic as well as flower rich resources, which are the habitat niches identified to be of greater value for invertebrate species / assemblages. As a result, the quality of Open Mosaic Habitat will also invariably decline.

5.3.16. It is therefore important to note that the findings of the survey work from 2023 represent a time when there is an elevated level of importance for this group at the application site, albeit one where Open Mosaic Habitats are still identified to be in unfavourable condition. For the reasons outlined above, it is considered that this does not indicate a sustained, long-term baseline but one which is currently at a ‘peak’ in terms of the opportunities that it provides for invertebrates.

5.3.17. There is therefore no evidence to indicate that the application site will continue to support opportunities for notable species and assemblages in the long term, such that would enable it to provide a stepping stone or more permanent parcel of ideal habitat for such species as opposed to a temporary refuge for individuals which may be attempting to disperse from Mitcham Common.

5.3.18. Notwithstanding the above, in accordance with the mitigation hierarchy, detailed consideration has been afforded as to the extent to which this habitat could be retained under the development proposals. This is set out in detail in the Habitat Retention Feasibility Statement (Appendix 1).

5.3.19. In summary, it would not be feasible or desirable for the development proposals to retain existing areas of Open Mosaic Habitat present within the application site. Furthermore, this is considered unlikely to be the optimal solution in biodiversity terms at the application site.

5.3.20. The development proposals therefore entail mitigation / compensation in the form of biodiverse green roofs on new buildings. The delivery of this habitat will not only ensure that equivalent opportunities are provided and retained within the application site for invertebrate species, but that these will be maintained in the long-term. Given that the Open Mosaic Habitat currently present within the application site represents a transitional stage, this would effectively 'fix' this habitat at an ideal stage of succession for this key group.

5.3.21. The design of the planting on the roofs associated with new buildings includes the provision of a diverse species mixture comprising a wide range of grassland and wildflower species. The depth of substrate on the roofs will vary between 80mm and 150mm (with at least 50% of the roof at least 150mm in depth). The planting mixture will include both plug planting of species of known value for invertebrates (including flowering species currently found on site, utilising the existing seed resource) and also allow for natural recolonisation of substrate as has occurred naturally on the site.

5.3.22. The roof will also incorporate features of specific benefit for invertebrate species, including areas of bare substrate (for Hymenoptera), rubble and brick piles, and wooden features, logs and/or brash.

5.3.23. The proposed management regime for biodiverse roofs will include measures to ensure that these optimal habitats are maintained in the long-term. This could include a management regime that encourages occasional disturbance to diversify the structure of the roof. Final details regarding the design, composition, layout and management of biodiverse roofs at the development may be secured via an appropriately worded planning condition, as required.

5.3.24. Whilst the development proposals would therefore result in the loss of Open Mosaic Habitat, equivalent opportunities for invertebrates would be provided and maintained in the form of biodiverse roofs. Given that the invertebrate species currently found at the application site could only have colonised in the last eight years, equally it is reasonable to expect that they would also recolonise the site again following the provision of similar habitats within the new development.

5.3.25. As illustrated on the landscape plans produced by Gillespies, the development proposals involve the provision of extensive areas of other new species-rich landscape planting throughout the application site. A wide range of habitats will be delivered, including rain gardens, wildflower grassland, scrub, trees and ornamental planting. The diversity of habitats post-development, and the implementation of an appropriate management regime, will therefore represent a significant improvement compared to the existing situation, both in terms of the inherent species-richness that they support as well as the opportunities that they will provide for faunal species.

Biodiversity Net Gain

5.3.26. As noted in the Section 3 of the Habitat Retention Feasibility Statement (Appendix 1), whilst the Environment Act 2021 includes a number of provisions in relation to nature conservation, including a mandatory requirement for development proposals to secure Biodiversity Net Gain (BNG), the relevant provisions have not yet come into place. The relevant piece of legislation will come forward next year. As outlined in the letter from

the Chief Planner dated 6 October 2023, it is confirmed that the mandatory BNG requirements as outlined in the Environment Act will only apply to new planning applications made after January 2024.

5.3.27. Whilst there is therefore no current mandatory or indeed planning policy requirement to undertake detailed assessment in relation to BNG utilising a metric, assessment work in relation to BNG has been undertaken by Ecology Solutions.

5.3.28. Assessment work was undertaken utilising a previous version of the Defra Metric (version 3.1), mindful that this was originally used to assess the earlier scheme with the findings presented in the previous Ecological Assessment and Addendum reports.

5.3.29. In light of the requirements set out in the Environment Act, the pre-development biodiversity value was assessed in light of the relevant date, which is the date of the application. As such, the baseline value of the application site was assessed based on the position from December 2022 (i.e. as illustrated on Plan ECO2(C)).

5.3.30. The summary sheet from the BNG assessment is provided at Appendix 10 of this Assessment, with further information and justification in relation to the condition assessment provided in Appendix 11. In summary, the BNG assessment calculates that the development proposals would result in a net gain of **8.32%** compared to the baseline as of December 2022. Whilst this is below the level set out in the Environment Act, it illustrates that the development proposals would nonetheless deliver measurable net gain compared to the existing situation.

5.3.31. Moreover, as outlined above, it is important to recognise that the Open Mosaic Habitat present has arisen in a relatively short space of time, and is unlikely to persist in the absence of any intervention. As a result, the BNG as assessed utilising the metric would equally [redacted] if this assessment had been undertaken either following clearance of the site in 2015, or in the future when Open Mosaic Habitat has ultimately been lost.

5.3.32. If the BNG assessment was re-run for instance on the basis of the situation in 2015, the level of net gain calculated based on the proposals would be significantly greater, at +93.40%. Similarly, if one was to undertake an assessment based on the likely future situation – whereby bare ground and Open Mosaic Habitat would have been colonised by grassland – the level of net gain would equally be greater than that calculated based on the situation as of December 2022 at +8.32%.

5.3.33. As such, the assessment therefore indicates that even based on the situation at the time of the submission of the planning application, which represent an elevated level of botanical interest at the application site, the development proposals would be likely to deliver a net gain in biodiversity compared to the existing situation.

5.3.34. This calculation includes the habitats present within the PRS in the southern part of the site, assuming that those present at the time of submission (December 2022) are simply retained post-development. However, in the event that the PRS is removed and this area can support additional habitats, this would provide an opportunity to provide further net gain on site. If this

area was to constitute flowering lawn in addition to 15 new small trees, the level of net gain would increase to circa 14%.

5.3.35. It is noted that the Summary Sheet states that the trading rules which form an intrinsic part of the metric assessment process are not satisfied in this instance. The trading rules element of the metric is intended to avoid the replacement of habitats which are of a specific distinctiveness ('ecological value') with more habitat of a lower distinctiveness – i.e. providing more poor quality grassland to mitigate for the loss of good quality grassland, for example.

5.3.36. In this instance, the reason for the error arises due to the fact that there are some losses to open mosaic habitats and scrub habitats within the scheme. The areas of scrub are replaced with new tree planting, which is of equivalent distinctiveness, but as this habitat falls under a different broad habitat category ('urban' as opposed to 'heathland and scrub'), an error is flagged. Furthermore as outlined above open mosaic habitat will be replaced with biodiverse green roofs which will provide functional habitats in the future.

5.4. Faunal Evaluation

Bats

5.4.1. **Legislation.** All bats are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and included on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations , as amended). These include provisions making it an offence:

- Deliberately to kill, injure or take (capture) bats;
- Deliberately to disturb bats in such a way as to be likely to significantly affect:-
  (i) the ability of any significant group of bats to survive, breed or rear or nurture their young; or to hibernate; or
  (ii) to affect significantly the local distribution or abundance of the species concerned;
- To damage or destroy any breeding or resting place used by bats;
- To intentionally or recklessly obstruct access to any place used by bats for shelter or protection (even if bats are not in residence).

5.4.2. While the legislation is deemed to apply even when bats are not in residence, Natural England guidance suggests that certain activities such as re-roofing can be completed outside sensitive periods when bats are not in residence provided these do not damage or destroy the roost.

5.4.3. The words 'deliberately' and 'intentionally' include actions where a court can infer that the defendant knew 'the action taken would almost inevitably result in an offence, even if that was not the primary purpose of the act.

5.4.4. The offence of damaging (making it worse for the bat) or destroying a breeding site or resting place is an absolute offence. Such actions do not have to be deliberate for an offence to be committed.

5.4.5. All bats are London Priority Species, and seven species of bat are Priority Species in England; specifically, Barbastelle *Barbastella barbastellus*, Bechstein's *Myotis bechsteinii*, Noctule, Soprano Pipistrelle, Brown Long-eared *Plecotus auritus*, Greater Horseshoe *Rhinolophus ferrumequinum,* and Lesser Horseshoe *Rhinolophus hipposideros*.

5.4.6. **Application Site Evaluation.** As outlined above, none of the buildings, structures or trees present within or immediately adjacent to the application site boundary provide opportunities for roosting bats.

5.4.7. The habitats present within the application site and its immediate vicinity are highly unlikely to be of any value for foraging or commuting bats in the local area, particularly given the geographical context of the site and the presence of existing street lighting along adjoining roads.

5.4.8. **Avoidance and Mitigation.** The demolition of existing buildings and structures within the application site will not result in the loss of any potential roosting opportunities, and as such no mitigation would be necessary.

5.4.9. Consideration has been afforded to the provision of new bat roosting boxes as part of the proposals. However, given the context of the site, and its isolation from semi-natural habitats in the local area that are likely to be used by foraging and commuting bats, it is considered highly unlikely that bats would utilise these should they be installed. On this basis, no bat roosting boxes are proposed in respect of this site.

5.4.10. Notwithstanding the limited opportunities that the application site provides for bats at present, the provision of species-rich habitats is anticipated to result in minor enhancements in terms of opportunities for foraging and commuting bats in the local area. It is recommended that the lighting strategy should seek to maintain dark areas where possible, through the use of measures such as hoods, cowls and louvres to direct lighting to where it is required.

Hedgehogs

5.4.11. **Legislation.** Hedgehog is not a specially protected species, with the exception of the prevention of killing or trapping by certain methods under Schedule 6 of the Wildlife and Countryside Act 1981, as amended.

5.4.12. However, Hedgehog is a priority species under Section 42 of the Natural Environment and Rural Communities Act 2006. The NERC Act 2006 requires the Secretary of State to:

"…take such steps as appear…to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any list published under this section, or…promote the taking by others of such steps"

5.4.13. **Avoidance, Mitigation and Enhancements.** Whilst the presence of Hedgehogs within the application site is considered reasonably unlikely, a

precautionary approach will be adopted for the clearance of superficially suitable vegetation (specifically areas of scrub, ruderal vegetation and trees). The ground layer of habitats will be cleared outside the hibernation period (October to April) wherever possible, or alternatively will be checked by an ecologist prior to removal, to ensure no hibernating Hedgehogs are present.

5.4.14. The provision of new planting within the application site include ornamental planting, scrub, grassland and trees will also provide improved foraging, sheltering and dispersal opportunities for small mammals including Hedgehogs.

Birds

5.4.15. **Legislation.** Section 1 of the Wildlife and Countryside Act 1981 (as amended) is concerned with the protection of wild birds, whilst Schedule 1 lists species that are protected by special penalties. All species of birds receive general protection whilst nesting.

5.4.16. **Application Site Usage.** The majority of the application site offers poor opportunities for nesting and foraging birds, with small areas of scrub and recolonising grassland providing some opportunities for nesting and foraging.

5.4.17. **Avoidance, Mitigation and Enhancements.** Notwithstanding the limited extent of suitable nesting habitat, the removal of scrub and trees present within the application site should ideally be undertaken outside of the main bird nesting season (March to July inclusive) to avoid potential harm to this group. Alternatively, works may be undertaken within this period subject to the completion of a nesting bird survey by a suitably qualified ecologist, which confirms that there are no nesting birds in the vegetation to be removed.

5.4.18. Should a nest be found during a survey, vegetation will be retained with an appropriate buffer zone, and removal may only be undertaken once the ecologist has confirmed that the young have fledged and the nest is no longer in use.

5.4.19. The provision of new habitats including trees, ornamental planting, biodiverse green roofs and grassland will provide improved opportunities for foraging and nesting birds.

5.4.20. The provision of new bird nesting boxes on new buildings would provide mitigation and enhancements compared to the existing situation. Using nest boxes of varying designs would maximise the species complement attracted to the application site. The use of House Sparrow Terraces and Swift boxes (No. 17 Schwegler Swift Nest Box or similar equivalent) would be of particular benefit, mindful that these are species on the Red List of the Birds of Conservation Concern and that they are also Priority species. Suitable examples of bird nesting boxes that could be installed on buildings are included at Appendix 12.

Invertebrates

5.4.21. **Application Site Usage.** As outlined above, the Open Mosaic Habitat present within the application site provides opportunities for invertebrate species, although detailed surveys did not identify the presence of any protected or endangered species.

5.4.22. **Avoidance, Mitigation and Enhancements.** The approach outlined above in respect of biodiverse green roofs will ensure that existing opportunities provided for this group by Open Mosaic Habitat will be secured and maintained in the long-term.

5.4.23. The planting of native and wildlife-beneficial species would provide new and enhanced opportunities for a range of invertebrates. By using a range of wildlife-beneficial species (for instance, including nectar-rich flower plants and those of known value), and providing ideal features as part of the design of green roofs within the site (including varied depth of substrate and habitat piles), this would serve to maximise opportunities for this group, and in term deliver benefits for other groups such as birds and bats.

5.5. Summary of Avoidance, Mitigation and Enhancements

5.5.1. For clarity, the development proposals outlined above in relation to designated sites, habitats and faunal species are listed below:

- Standard engineering protocols and best practice throughout construction including measures as required to mitigate for potential harm via pathways such as noise, dust deposition and contaminated run-off, with detail outlined in a CEMP;
- Provision of biodiverse green roofs on new buildings, designed in light of ecomimicry principles, to retain and enhance opportunities for invertebrates in the long-term;
- Provision of new species-rich landscape planting throughout the site and adoption of an appropriate management regime;
- Lighting strategy to incorporate measures such as hoods, cowls and louvres to maintain dark areas where possible;
- Adoption of a precautionary approach towards clearance of suitable habitat to avoid harm to Hedgehogs, if present within the application site;
- Removal of suitable bird nesting habitats outside of the main bird nesting season or alternatively following a nesting bird survey by a suitably qualified ecologist to confirm no nesting birds are present;
- Provision of new bird nesting boxes on new buildings; and
- Provision of key features for invertebrates including green roofs with varied substrate depth and habitat piles.

6. PLANNING POLICY CONTEXT

6.1. The planning policy framework that relates to nature conservation at Mitcham is issued at three main administrative levels: nationally through the National Planning Policy Framework (NPPF); at the regional level through the London Plan; and locally through documents related to the London Borough of Merton Local Plan. The proposed development will be considered in relation to the policies contained within these documents.

6.2. National Policy

National Planning Policy Framework (2023)

6.2.1. The National Planning Policy Framework (NPPF) sets out the Government's requirements for the planning system and was adopted on 27th March 2012 and subsequently revised on the 24 July 2018, 19 February 2019, 20 July 2021 and 5 September 2023.

6.2.2. The key element of the NPPF is that there should be *a presumption in favour of sustainable developmen*t (paragraphs 10 to 11).

6.2.3. The revised NPPF is comparable to previous versions (which it replaces), including reference to minimising impacts on biodiversity and provision of net gains to biodiversity where possible (paragraph 179) and ensuring that Local Authorities place appropriate weight to statutory and non-statutory nature conservation designations, protected species and biodiversity.

6.2.4. The NPPF also considers the strategic approach that Local Authorities should adopt with regard to the protection, maintenance and enhancement of Green Infrastructure, priority habitats and ecological networks, and the recovery of priority species.

6.2.5. Paragraph 180 of the NPPF comprises a number of principles which Local Authorities should apply, including:

- encouraging opportunities to incorporate biodiversity in and around developments;
- provision for refusal of planning applications if significant harm cannot be avoided, mitigated or, as a last resort, compensated for; and
- the provision for the refusal for developments resulting in the loss or deterioration of 'irreplaceable' habitats unless the need for, and benefits of, the development in that location clearly outweigh the loss.

6.2.6. National policy therefore implicitly recognises the importance of biodiversity and that with sensitive planning and design, development and conservation of the natural heritage can co-exist and benefits can, in certain circumstances, be obtained.

6.3. Regional Policy

The London Plan

6.3.1. Policies providing guidance on the relationship between development and nature conservation in London can be located in The London Plan, adopted

in March 2021. The plan is the overall strategic plan for London and sets out an integrated framework for the development of the capital for the next 20 – 25 years. This document replaces the London Plan, which was published in March 2016.

6.3.2. There are four key policies within the London Plan which relate to ecology and nature conservation at the site.

6.3.3. **Policy G1: Green Infrastructure**. This policy deals with the protection and expansion of London's green infrastructure network. It states that green infrastructure should be planned to integrate within a wider network. Development plans should incorporate appropriate elements of green infrastructure.

6.3.4. **Policy G5: Urban Greening.** This policy states that major developments should contribute to the greening of London by including urban greening as a fundamental element of site and building design. The policy notes that Boroughs should determine the amount of greening required in new developments and existing green cover retained onsite will contribute to green target scores.

6.3.5. **Policy G6: Biodiversity and access to nature** states that SINCs should be protected and that development plans should: identify SINCs and ecological corridors to identify coherent networks; support the protection and conservation of priority species and habitats that sit outside the SINC network; search for opportunities to create other habitats or features such as artificial nests; and clearly identified designated sites of European or national importance and assess any impacts. The policy notes that where harm to a SINC is unavoidable measures should be taken to avoid, minimise and lastly compensate for any losses. The policy also states that development proposals should aim to secure net gains in biodiversity.

6.3.6. **Policy G7: Trees and woodlands.** This policy states that London's urban forests and woodland should be protected and maintained, and new trees and woodland should be planted in appropriate locations to increase the urban forest. The policy notes that development proposals should ensure that where possible existing trees of value are retained, and any losses should be replaced.

6.4. Local Policy

London Borough of Merton Local Plan

6.4.1. The London Borough of Merton Local Plan: Core Planning Strategy (2011) has one policy of relevance to nature conservation which is summarised below.

6.4.2. **Policy CS 13: Open space, nature conservation, leisure and culture.** This policy details a number of measures to ensure development is sustainable and protects and improves access to open spaces. Those of relevance to nature conservation include protecting and enhancing the boroughs public and private open spaces, protect and enhance biodiversity and encourage more green spaces and access to waterways.

6.4.3. A new Local Plan is currently being reviewed and is due to be adopted in due course. The emerging Local Plan will replace Merton's adopted borough-wide Local Plan (the Core Planning Strategy 2021 and Sites and Policies Plan 2014).

6.4.4. The new policies in relation to nature conservation is summarised below.

6.4.5. **Strategic Policy O15.1: Open Space, Green Infrastructure and Nature Conservation.** This policy states that access to open spaces and green infrastructure plays an important role in the physical and mental health and wellbeing of all people. The policy notes that the Council aim to ensure Merton remains an attractive and green borough, through the protection and enhancement of open spaces, green infrastructure and the natural environment.

6.4.6. **Policy O15.3 Biodiversity and Access to Nature** states that the Council will protect and enhance the natural environment. Aiming to protect and enhance biodiversity, particularly on sites of recognised nature conservation interest, and to improve accessibility to nature throughout the borough, through contributions to net gains in biodiversity and protecting priority species and habitats.

6.4.7. **Policy O15.4: Protection of Trees** is concerned with the protection and enhancement of trees and hedgerows, as well as encouraging new planting of trees and canopies.

6.4.8. **Policy O15.5: Urban Greening** states that new developments should incorporates green infrastructure, to help create healthier places, enhance biodiversity and address the urban heat island effect.

6.5. Discussion

6.5.1. Recommendations have been put forward in this report that would fully safeguard the existing ecological interest of the site. Based on the survey and assessment work undertaken, the presence and potential presence of protected and notable species has been given due regard and measures which may be incorporated within emerging proposals to enhance the site for such species have been put forward.

6.5.2. In conclusion, implementation of the measures set out in this report would enable emerging proposals at this site to fully accord with planning policy and guidance for ecology and nature conservation at all administrative levels.

7. SUMMARY AND CONCLUSIONS

7.1. Ecology Solutions Limited was commissioned in June 2021 by St William Homes LLP to undertake an Ecological Assessment of the Land at Mitcham Gasworks, 49 Western Road Mitcham, London, CR4 3ED.

7.2. There are no designated sites of nature conservation interest within or immediately adjacent to the application site. The nearest designated sites are separated from the application site by existing development and infrastructure. As outlined above, given the nature of the proposals it is considered unlikely that any significant effects would arise, either during the construction or operational phases, when the proposals are considered alone or in combination with other plans and projects. In any event, the adoption of standard engineering protocols and best practice during the construction period would ensure that potential harm and disturbance will be avoided.

7.3. The application site primarily comprises hardstanding, bare ground and existing buildings, with areas of species-poor recolonising grassland, ruderal vegetation and scrub. Updated survey work undertaken in 2023 identified that the application site had developed areas of Open Mosaic Habitat, although as outlined above this represents a transitional habitat of some elevated interest for invertebrates, but which would not be sustainable in the long term. The provision of new landscape planting within the site provides an opportunity to provide the existing short term opportunities and value associated with Open Mosaic Habitat, in the form of biodiverse roofs, whilst delivering biodiversity enhancements compared to the existing situation, and providing improved opportunities for groups such as invertebrates and birds.

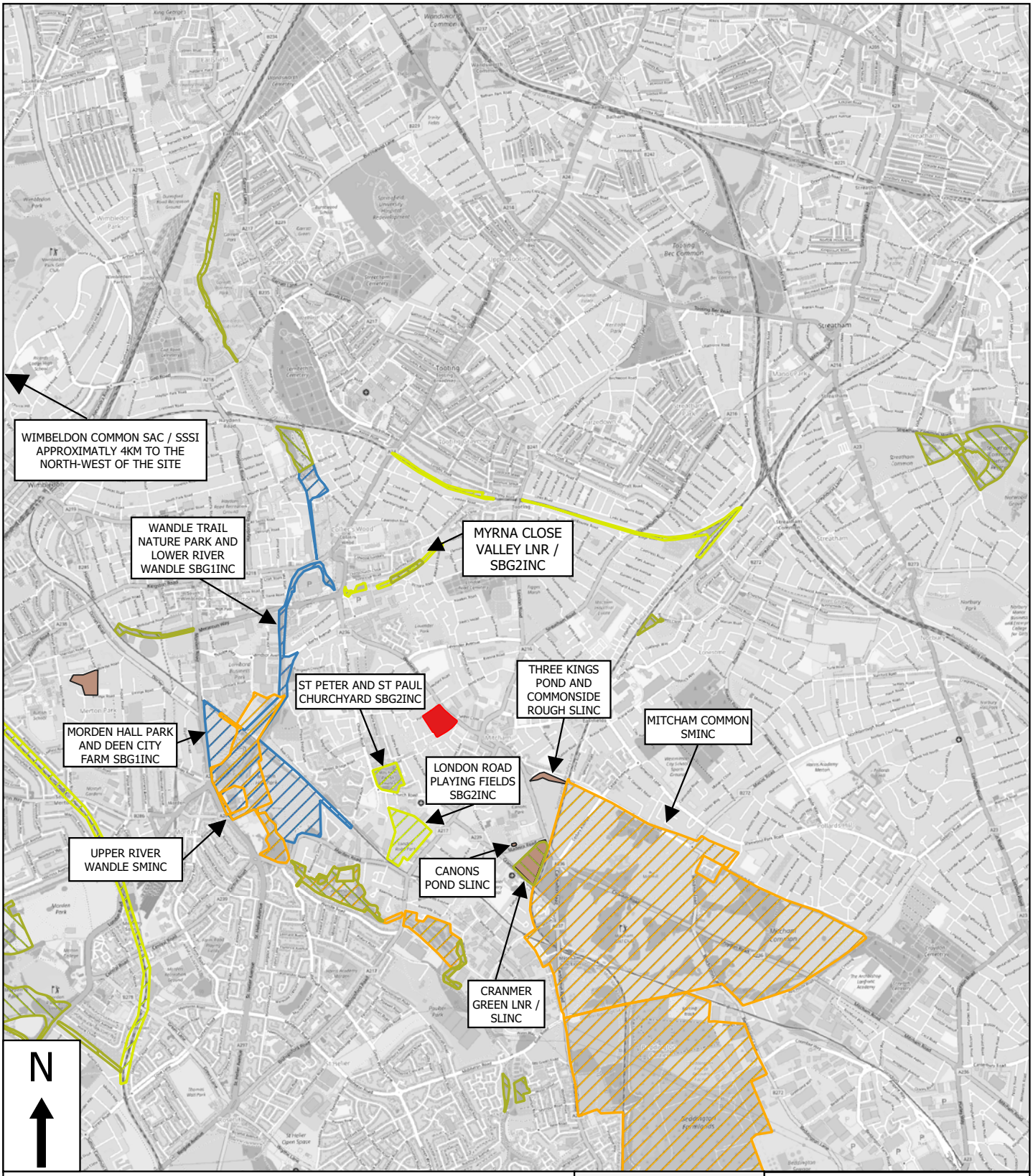
7.4. No evidence of roosting bats was recorded during the specific surveys undertaken, and the buildings, structures and trees present within and immediately adjacent to the application site are not considered to offer any suitable opportunities for this group. Similarly, the habitats present within the application site provide few opportunities for birds. The provision of bird nesting boxes on new buildings will deliver improved opportunities for this group post-development.

7.5. In conclusion, the development proposals will avoid potential adverse effects and provide opportunities for the delivery of enhancements to biodiversity, with a net gain in biodiversity likely to be achieved. On this basis, the development proposals accord with all legislation and planning policy of relevance to ecology and nature conservation.

PLANS

PLAN ECO1

Application Site Location and Ecological Designations



- APPLICATION SITE LOCATION
- LOCAL NATURE RESERVE (LNR)
- SITE OF METROPOLITAN IMPORTANCE FOR NATURE CONSERVATION (SMINC)
- SITE OF BOROUGH GRADE I IMPORTANCE FOR NATURE CONSERVATION (SBG1INC)
- SITE OF BOROUGH GRADE II IMPORTANCE FOR NATURE CONSERVATION (SBG2INC)
- SITE OF LOCAL IMPORTANCE FOR NATURE CONSERVATION (SLINC)

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9740: MITCHAM GASWORKS

PLAN ECO1: APPLICATION SITE LOCATION AND ECOLOGICAL DESIGNATIONS

Rev: A

JUNE 2022

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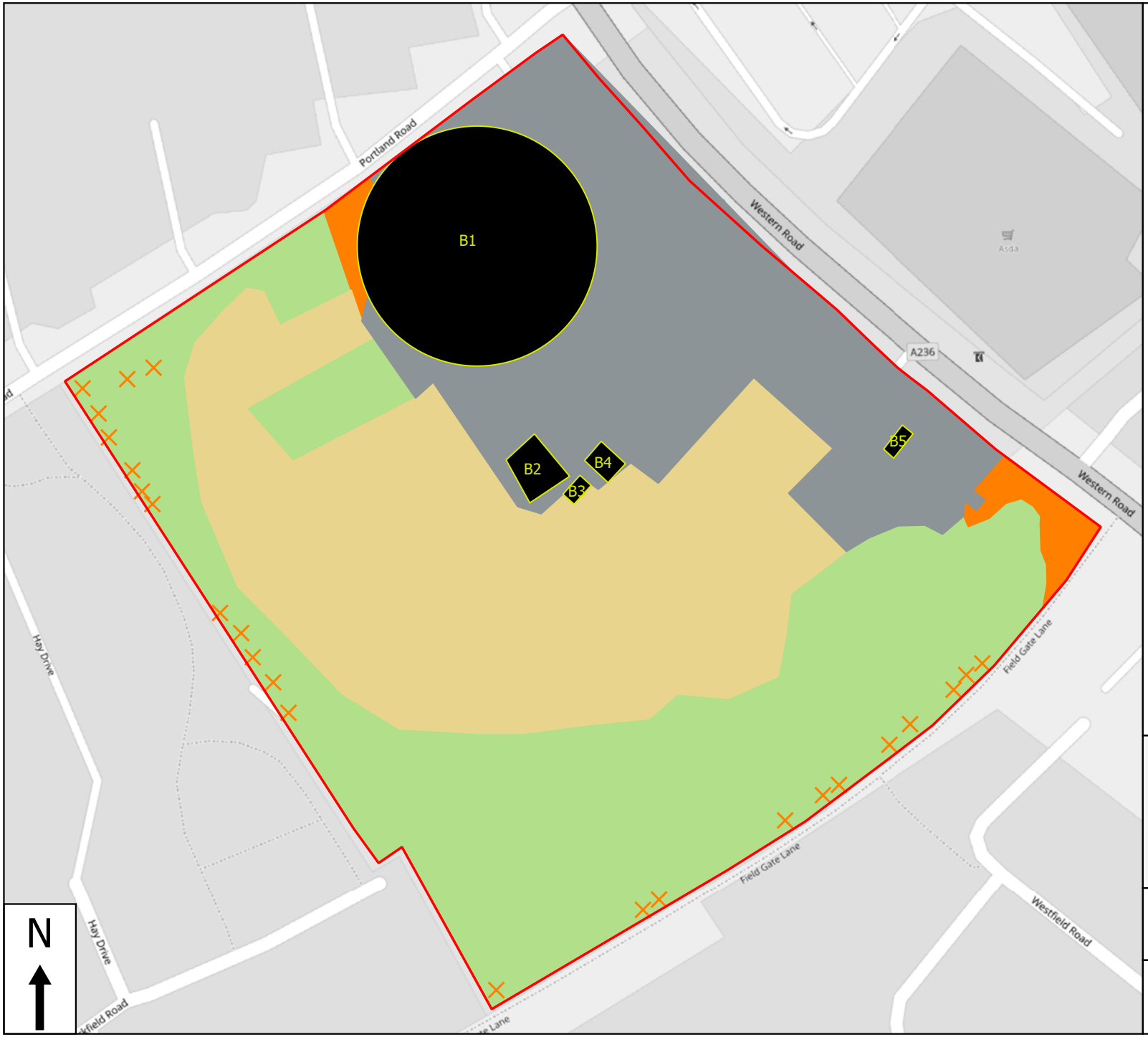
PLAN ECO2(A)

Ecological Features (Summer 2021)



Key:

- APPLICATION SITE BOUNDARY
- HARDSTANDING
- BARE GROUND
- SPECIES-POOR GRASSLAND WITH RUDERAL VEGETATION
- DENSE SCRUB
- SCATTERED SCRUB
- EXISTING BUILDING / STRUCTURE

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PLAN ECO2(B)

Ecological Features (Summer 2023)

Key:

- APPLICATION SITE BOUNDARY
- HARDSTANDING
- BARE GROUND
- SPECIES POOR GRASSLAND WITH RUDERAL VEGETATION
- OPEN MOSAIC HABITAT
- MIXED SCRUB
- BRAMBLE SCRUB
- EXISTING BUILDING
- SCATTERED SCRUB

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PLAN ECO2(B): ECOLOGICAL FEATURES (SUMMER 2023)

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NOV 2023

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PLAN ECO2(C)

Ecological Features (December 2022)

Key:

- APPLICATION SITE BOUNDARY
- HARDSTANDING
- BARE GROUND
- 2
- OPEN MOSAIC HABITAT (ESTIMATED EXTENT)
- SPECIES POOR GRASSLAND WITH RUDERAL VEGETATION
- MIXED SCRUB
- BRAMBLE SCRUB
- EXISTING BUILDING
- SCATTERED SCRUB

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PLAN ECO2(C): ECOLOGICAL FEATURES (DECEMBER 2022)

Rev: A
NOV 2023

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APPENDICES

APPENDIX 1

Habitat Retention Feasibility Statement

Mitcham Gasworks
Habitat Retention Feasibility Statement
December 2023

Mitcham Gasworks
Habitat Retention Feasibility Statement

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Executive Summary

Open Mosaic Habitat

The site has a long history of use as a gasworks, with a low ecological value due to the site being almost completely covered by hardstanding, buildings and gasholders.

An area of Open Mosaic Habitat has emerged over the course of the last year following the cessation of activities on site. This is mostly located around the area used as an access road, with the new habitat cultivating this space after it was disturbed and then all use stopped in mid-late 2022. The location, extent and quality of the Open Mosaic Habitat has been identified by qualified and experienced ecologists, informed by site walkover surveys and invertebrate surveys.

This statement considers the feasibility and desirability of retaining the existing Open Mosaic Habitat in line with the 'mitigation hierarchy' approach, which is a good practice principle set out in guidance from the Chartered Institute of Ecology and Environmental Management.
The application of the guidance on mitigation hierarchy should be undertaken pragmatically in the context of the requirements in environmental legislation and relevant planning policy. The planning policy context includes the allocation of the site for a residential development and a requirement to optimise sites such as this to meet housing needs. The mitigation hierarchy should also be applied in the context of other good practice principles, which include achieving the best outcomes for biodiversity that can have a lasting impact.

Open Mosaic Habitat is identified as a Priority Habitat in the Natural Environment and Rural Communities Act 2006. Its ecological significance relates primarily to its ability to support invertebrate species, rather than the intrinsic value of the habitat itself. It is not identified as an 'irreplaceable habitat'. Open mosaic habitat only occurs on sites which were previously developed land but which have subsequently been cleared and left unmanaged, with vegetation rapidly recolonising.

A key feature of open mosaic habitat is that it is a habitat that can arise quickly (as evident in the way it has developed on the site since mid-late 2022). However, if left, through a process of natural ecological succession the open mosaic habitat will also disappear quite quickly, as the bare ground and floristically rich elements of the habitat get replaced by rough grasses, Buddleia and Bramble scrub. The grasses and scrub do not provide the same opportunities for invertebrates and other species, which is what gives open mosaic habitat its significance.

This statement demonstrates that the guidance on mitigation hierarchy has been appropriately applied. Avoidance of all harm through retention of all the open mosaic habitat is incompatible with residential redevelopment. Due to the contamination associated with the sites previous use as a gasworks, any area of existing habitat retained within a new residential development would have to be fenced off to prevent public access. Fencing off the area of existing open mosaic habitat would result in a completely different development, capable of delivering only a small proportion of the number of homes, with much less publicly accessible open space and no permeable routes through the site.
This would effectively sterilise the whole site as the remaining parts of the site would not accommodate a development that would viably secure the remediation of the site.

Through natural ecological succession, the segregated area would soon become an area of scrub, with relatively low ecological value and a poor visual relationship with the new development. This approach would not be consistent with the good practice principle of achieving the best outcomes for biodiversity that can have a lasting impact.

Conversely, to allow the Open Mosaic Habitat to be accessible to the public with no fence around it, the ground will require remediation, which would remove the OMH from the site.

Minimisation is also not possible – even the retention of a smaller area of open mosaic habitat would result in a compromised development and the retention of an area that would gradually [redacted] over time to scrub and decrease in biodiversity value. This is evidently not the best overall outcome for biodiversity or the best scheme in wider planning terms.

Having dismissed avoidance and minimisation as feasible options, the next stage in the hierarchy is compensation. The transposition of the existing habitat is not a feasible option due to the contaminated nature of the existing soils and the requirements of the remediation process. The creation of a replacement open mosaic habitat off-site would also not be a desirable option due to the natural succession to grass and scrub and the associated gradual decrease in biodiversity value.

The most appropriate form of compensation can be achieved through the provision of alternative habitats as part of the redevelopment of the site. This also takes account of the fact that the ecological significance of the existing habitat on the site lies primarily in the opportunities for supporting invertebrate species, rather than in the intrinsic value of the open mosaic habitat itself.

Therefore, whilst the steps in the mitigation hierarchy have been followed, the priority should be securing the delivery and long term maintenance of a habitat that is capable of supporting invertebrates, rather than focussing on the open mosaic habitat. The proposed development incorporates green/brown roofs that provide suitable habitats for invertebrates. This recognises the biodiversity value of the existing site and re-provides this in a way that is compatible with achieving the other aims of the redevelopment.

Biodiversity Net Gain

Whilst the legal requirement on measuring biodiversity net gain does not apply to this application (only coming into effect for planning applications submitted after January 2024), an illustrative net gain assessment has been undertaken in line with the forthcoming Environment Act requirements. The proposed development would deliver around 8% biodiversity net gain when compared with the biodiversity value of the existing site at the time of the application submission. With the planned future removal of the central pressure reduction station, the area could be planted with species rich grassland, which would increase the biodiversity net gain to an estimated 14%.

The compensation approach within the proposed development provides better outcomes all around:

- In ecological terms – through providing new habitats that are suitable for invertebrates and would be managed to deliver a biodiversity benefit for the long term.
- In social and economic terms – through delivering more homes, public open space and playspace.
- In sustainable development terms – through optimising the use of an allocated brownfield site in a sustainable location
- In design terms – allowing the creation of attractive public open spaces that complement the new buildings, as well as new public realm and routes through the site.

The proposed approach is the most beneficial in terms of ecology and biodiversity. It ensures a biodiversity net gain by acknowledging that while the open mosaic habitat naturally diminishes over time, the proposed new development allows for the creation and sustained management of a diverse habitat over the long term.

This approach is also the best outcome in planning terms, achieving a fully remediated site and introducing 579 new homes, among which 35% are affordable. This would all be incorporated alongside new public routes, open spaces and play areas, which enhance biodiversity value whilst creating a new community on this sustainable brownfield site.

1. Introduction

1.1. This Habitat Retention Feasibility Statement has been prepared by St William, Ecology Solutions and WSP, to consider the feasibility of habitat retention, specifically Open Mosaic Habitat (OMH). This is in the context of the post submission update in classification of existing habitats on site, which has identified OMH on site.

1.2. The statement presents an overview of the site history to contextualise how the existing habitats have developed over time. currently present on site. This is et out alongside planning policy and environmental legislative frameworks related to habitat retention.

1.3. The statement is submitted as part of the pack of amendments to planning application 22/P3620 and should be read in conjunction with:

- Ecological Assessment updated December 2023
- Planning Statement Addendum December 2023
- Preliminary Geo-Environmental Risk Assessment December 2022

2. Site History

2.1. A review of the site history illustrates that the longstanding ecological value of the site has been low, with Open Mosaic Habitat only emerging over the course of the last year following the cessation of activities on site associated with the gasworks, the demolition and removal of the gas holder, and the occupation of the site by travellers.

2.2. This site was part of a larger gasworks, which included adjacent land to the south-west. The earliest available mapping, dated 1871 to 1879, identifies several structures including gasholders and other buildings associated with gas manufacture, purification and storage. Gas production finished in 1960 but the gasholders remained on site for a number of years, with the final frame being removed in early 2022.

2.3. The site was subsequently used as offices and parking before a large part was remediated to secure vacant land in 2010 and 2011, which would have enabled the site to be used for commercial and open storage uses. The site has subsequently sat vacant and closed to the public on health and safety grounds.

2.4. Figure 1 shows the site in March 2012, following the remediation works.

Figure 1 – March 2012

2.5. Following the remediation works, the site was used as a works compound in 2013 during construction of the adjacent Lavender Gardens development, see Figure 2.

Figure 2 – July 2013

2.6. Figure 3 shows the site in April 2015 following completion of the adjacent development. The site is largely cleared with limited vegetation on site.

Figure 3 – April 2015

2.7. The site subsequently sat vacant and by May 2018 (Figure 4) recolonisation had begun with parts of the site showing vegetation.

Figure 4 – May 2018

2.8. By March 2021 (Figure 5), the areas of vegetation have become more established. An area of bare ground is shown extending from the hardstanding near Western Road through the centre (shown in blue). This area is associated with gas rationalisation works that took place on site the previous year.

Figure 5 – March 2021

2.9. During the latter part of 2021 and into 2022, the final gasholder frame was removed. This required a haul road from the Western Road entrance, extending through the centre of the site before heading north towards the gasholder. This can be seen from Figure 6 which was taken during the demolition works. Areas either side of the haul road were also used for storage, as can be seen by the containers and machinery.

Figure 6 – September 2021

2.10. Following the demolition of the holder, the site has remained largely vacant, with ad hoc access required for gas and telecommunications works.

2.11. Whilst the site lay vacant during 2022, it was broken into and occupied by travellers. During this, significant disruption and damage was caused to the site, including a substantial amount of fly-tipping. There was significant activity and vehicle movements across the site, with the below images showing the extent of the disruption and bare ground evident on the site on the date the images were captured following the departure of the travellers on 24 June 2022.

Figure 7- June 2022

2.12. A further break-in occurred in November 2022, with travellers once again leaving significant amounts of waste which required removal.

3. Principle of Redevelopment of the Site

3.1. The principle of residential development is established through strong policy impetus in the London Plan and the NPPF to optimise housing delivery on sites such as, along with both the adopted and emerging site allocations. The site is also a brownfield site in a sustainable location for a residential-led development, close to the facilities of Mitcham Town Centre, existing cycle routes, bus routes and train stations.

3.2. There is a pressing need for new housing within the London Borough of Merton (LBM). Policy H1 of the London Plan sets a 10-year housing target of 9,180 for LBM, equivalent to 918 homes per annum and supports the optimisation of housing delivery on suitable sites.

3.3. The Government's objective is to significantly increase the supply of homes (paragraph 60, NPPF). The NPPF is clear in its instruction for the need to boost and maintain the supply of housing, and that it is important that a sufficient amount and variety of land can come forward where needed (Paragraph 76).

3.4. Making efficient use of under-utilised land is supported by paragraph 119 of the NPPF, in particular promoting development of under-utilised land where this would help to meet identified needs for housing. Paragraph 120 states that planning decisions should give substantial weight to the value of using suitable brownfield land within settlements for homes and other identified needs. London Plan policy D3 states that all developments must make the best use of land by following a design-led approach that optimises the capacity of sites, including site allocations.

3.5. The adopted Mitcham and Policies Plan document allocates the Mitcham Gasworks Site (Site Proposal 75) for residential-led redevelopment with open space and community use. The adopted site allocation is carried forwards in the emerging New Local Plan. The emerging New Local Plan proposes that the site should be developed to provide a residential-led development with open space and community use (Site Allocation Mi16), which identifies an indicative capacity of 500-650 homes. The emerging policy also includes design requirements including enhancing public realm through high quality urban design and architecture, laid out to be permeable and legible with full public access through the site, and the delivery of open space.

3.6. There are two primary pieces of legislation pertinent to ecology and nature conservation at this site; specifically, the Wildlife and Countryside Act 1981 (as amended), and the Conservation of Habitats and Species Regulations 2017 (as amended). The legislation affords protection to statutory designated sites (including Special Protection Areas, Special Areas of Conservation and Sites of Special Scientific Interest).

3.7. There is no statutory designation that applies to this site. Nor are there any ecological or nature designations in planning policy relating to the site.

3.8. The legislation also affords protection to a range of faunal species, which include bats and nesting birds. As discussed in the Ecological Assessment and section 4 of this report, the ecological surveys have not identified any protected species on this site.

3.9. There is clear planning policy support for the principle of a residential-led redevelopment of the site and no legal or planning policy requirement for maintaining the site in its current state. The onus is therefore on investigating the feasibility of retaining the features of ecological value as part of a redevelopment scheme, rather than in place of a redevelopment scheme.

4. Survey Results

4.1. As outlined in the Ecological Assessment, survey work undertaken previously at the application site in June 2021 identified that it supports a range of habitats, including hardstanding, sparsely vegetated ground with ephemeral / ruderal species, species-poor grassland, scrub and existing buildings and structures. At the time of the survey, the application site had been subject to recent works associated with gas rationalisation. These works resulted in disturbance to the ground layer throughout much of the site, notably in northern and central areas. As a result, areas of bare ground were recorded to be present (associated with significant levels of vehicle and machinery movement), with bordering areas to more sporadic disturbance associated with occasional encroachment and other activities.

4.2. The planning application for the redevelopment of the application site was subsequently submitted in December 2022. Between June 2021 and December 2022, the application site was not subject to any further ecological survey work, although it is evident that much activity continued on site, as outlined in section 2 of this statement.

4.3. Updated survey work was subsequently undertaken in June 2023, with further invertebrate survey work subsequently been undertaken in August and September 2023 to confirm the presence and moreover ascertain the value of the open mosaic habitat which is currently present within the site. Detailed survey and assessment work has been undertaken at the site by a specialist entomologist. The intention of the survey was to identify whether the application site supports assemblages of protected or notable invertebrate species which are of importance, and therefore to ascertain the quality of the open mosaic habitat which is currently present within the site.

4.4. As outlined in the detailed Invertebrate Survey Report included within the Ecological Assessment, the findings indicate that as of September 2023 there is indeed evidence from the invertebrate survey to support the conclusion that the site supports open mosaic habitat, with a number of notable species recorded to be present, although the survey did not identify the presence of any protected or endangered invertebrate species. However, assessment of the findings in light of the Pantheon analytical tool indicates that the open mosaic habitats at present are not in favourable condition given the assemblage of species which are present. As such, the open mosaic habitat currently present at the site is considered to be of poor quality. In light of guidance associated with assessment, the site is therefore currently considered to be of local significance for invertebrate species at most.

5. Habitat Classification

5.1. Open Mosaic Habitat (OMH) is identified as a Priority Habitat on Section 41 of the Natural Environment and Rural Communities Act 2006 (commonly known as the NERC Act). The legislation imposes a duty on various bodies (such as Local Planning Authorities) to have regard to the conservation of such habitats; however, it does not, in and of itself, afford any specific protection to open mosaic habitat.

5.2. Moreover, the legislation does not confer any other form of protection to such habitats, nor any obligation for a landowner to undertake specific management or other works (such as would be the case for a Site of Special Scientific Interest, in line with the Wildlife and Countryside Act 1981 as amended, for example).

5.3. Unlike other Priority habitats, open mosaic habitat is unusual in that it is primarily identified as being of ecological significance on account of the opportunities that it provides for notable invertebrate species and assemblages, as opposed to the intrinsic biodiversity value of the habitat itself. As such, when assessing the quality or condition of such habitats, it is important to recognise the extent to which the open mosaic habitat present does indeed support such species / assemblages as this is intrinsically relevant to its value, as well as to consider any aspects that could affect those opportunities both now and in the future. The identification of OMH within a site is therefore very different to other Priority habitats, such as calcareous grassland, in that the diversity of the habitat itself (in botanical terms) is typically of secondary importance; indeed, open mosaic habitat can in some instances represent relatively limited botanical diversity in its own right.

5.4. Given that open mosaic habitat is intrinsically associated with land which has previously been developed, it cannot be, by its very nature, an irreplaceable habitat. Unlike habitats such as Ancient Woodland, which have supported woodland for hundreds of years and have therefore developed a complex geological and biological status over that time, open mosaic habitat only occurs on sites which were previously developed land but which have subsequently been cleared and left unmanaged, with vegetation rapidly recolonising. Open mosaic habitat is therefore intrinsically a wholly man-made habitat which can develop where there are the right conditions in place.

5.5. It is also important to note that this is a habitat that can arise quickly. Analysis of aerial imagery in respect of this site (as outlined below) demonstrates that from a position of total site clearance in 2012 and regular disturbance to 2015, the site has only recently supported areas of recolonising vegetation. By the time of the initial ecological survey in 2021 it was not considered that the site supported open mosaic vegetation, but with the cessation of disturbance works and further recolonisation, by 2023 it is now considered to support this habitat.

5.6. With such habitats, consideration must also be afforded to ecological succession, which is the natural process which occurs over time to all sites in the absence of any management intervention. As outlined in the Ecological Assessment, at this site in the absence of any works (which would include the site coming forward for development, or indeed any other intervention or management works), it is realistic to expect that grassland would colonise all areas of bare ground over time, and that the grassland itself would become dominated by rough grasses and other rough species, leading to the loss of both structural and botanical diversity in the sward itself. In due course, encroachment of Buddleja and Bramble scrub would then occur, with this having taken place already in some parts of the site.

5.7. Ultimately, this would lead to the loss of the bare ground and floristically rich elements of the open mosaic habitat that currently provide opportunities for the notable invertebrate species and assemblages which were recorded in the detailed survey work in 2023. In some instances there are unique circumstances that can lead to the process of succession becoming ‘stuck’ at a site with open mosaic habitat, such as significant contamination of the ground layer by chemicals or particularly nutrient poor substrates. However, this is unlikely to be the case here as although the site was previously used as a gasworks and is known to be contaminated, site wide remediation has already taken place with the most contaminated elements being removed across the areas associated with open mosaic habitat. Although further remediation is required to bring the site to a residential end use, there is no evidence to indicate that such levels of contamination exist and that the site will become stuck . This is demonstrated by the aerial imagery, which indicates that it is highly likely that the site overall will progress towards grassland and ultimately scrub.

5.8. As a result, the presence of open mosaic habitat within the site today represents a current ‘snapshot’ at a time whereby there is an elevated level of invertebrate and therefore biodiversity interest, arising due to initial clearance of all habitats within the site (by 2015) followed by more recent disturbance (in 2020/21). The result is a temporary boost in diversity and opportunities for invertebrate species that, over time and in the absence of specific management, would be expected to decline and would ultimately be lost.

5.9. Moreover, as outlined above, the detailed invertebrate surveys undertaken have found that even at the present time, the value of the open mosaic habitat that the site supports is of local significance at most, supporting an assemblage of invertebrates which is uncommon in the local area but not one which is of high ecological significance. As such, whilst it is acknowledged that the current presence of open mosaic habitat within the site is a factor which should be considered, ecological surveys have not identified this to be an example of this habitat which is of such significance and value that it would pose a fundamental constraint to development coming forward at this site, notwithstanding that this represents a temporary ‘peak’ in value.

6. Applying the Mitigation Hierarchy

Introduction

6.1. The mitigation hierarchy is good practice principle that underpins ecological assessment, as advocated in guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM)1. The approach is stepwise and entails: firstly, the adoption of measures to avoid adverse effects or harm; next, the use of mitigation measures to minimise negative impacts; the provision of compensation measures where negative impacts cannot be avoided or offset; and finally, enhancement measures to deliver betterment with regard to ecology.

6.2. Paragraph 180 of the NPPF states that significant harm should be avoided, through locating on an alternative site with less harmful impacts, adequately mitigating, or as a last resort compensating. Core Strategy policy CS13 requires development to integrate new or enhanced habitat or design and landscaping to encourage biodiversity and where possible, avoid causing ecological damage. Mitigation measures should be proposed for ecological damage caused.

6.3. Merton's Local Plan Review contains a draft policy with a similar mitigation hierarchy. Draft Policy O15.3 sets out a mitigation hierarchy to be followed for where significant harm to biodiversity is unavoidable, which is i) avoid damaging the significant ecological features of the site; ii) minimise the overall spatial impact and mitigate it by improving the quality or management of the rest of the site; and iii) deliver off-site compensation of better Biodiversity value.

6.4. The process of ecological assessment and the application of the mitigation hierarchy relies upon the application of professional judgment by suitably qualified and experienced ecologists, considering evidence from surveys and desk study work, expertise and experience.

6.5. The guidance on the mitigation hierarchy must be applied pragmatically, with weight afforded not only to ecological aspects but also to wider aspects, such as the context of the residential site allocation and the planning policy requirements for the site. It should also be applied with consideration of other doo practice principles of ecological assessment and biodiversity net gain, such as securing the best possible long-term result for biodiversity.

Avoidance

6.6. As set out in the Ecological Assessment, the survey work has revealed that the ecological feature of most value within the site is the open mosaic habitat, with the ecological value relating to the opportunity that this gives to support invertebrate species, rather than intrinsic value in the habitat itself. The invertebrate survey has identified that this is open mosaic habitat of relatively poor quality.

6.7. Following the mitigation hierarchy, the first step is to consider the feasibility of retaining this habitat in situ to avoid any harm to this ecological feature.

[1] CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.* Version 1.2. Chartered Institute of Ecology and Environmental Management, Winchester.

6.8. Figure 6-1 below shows the extent of open mosaic habitat (in November 2023) overlayed on the proposed ground floor layout.

6.9. It is clear that the retention of this habitat would have significant implications in terms of the layout, number of new homes, usability and quality of the development.

6.10. This is made significantly more complicated by the contaminated nature of the land, as discussed below.

Feasibility of avoidance (retaining the OMH) in the context of land contamination

6.11. The sites legacy use as a gasworks has impacted shallow made ground soils and the underlying natural geology. The contamination is directly linked to the site's long history and industrial past use. The site underwent a significant programme of remediation works to ensure its suitability for a commercial / open storage end-use. The site is currently capped to mitigate contact with remaining contaminant sources, with gross contamination in historic structures removed in localised areas.

6.12. The site in its current condition is not deemed acceptable for residential end-use based on the potential risk to future site users, as per the Preliminary Risk Assessment (PRA) produced by Delta [redacted] When assessing the potential risk posed by contamination to a specific end use, developers and landowners must apply the Environment Agency guidance; Land Contamination Risk Management (LCRM).

6.13. The LCRM guidance defines a source as a contaminant or pollutant that is in, on or under the land that has the potential to cause harm or pollution to the environment. When assessing a site suitability for development, potential contamination sources are considered in the Conceptual Site Model (CSM) in relation to the proposed end use.

6.14. The PRA identifies contamination impacts in shallow made ground soils across the site containing: heavy metals, PAHs, petroleum hydrocarbons, BTEX compounds, cyanide, thiocyanate, sulphides, ammonia and phenols. This also includes residual contamination (including PAHs) within the imported and site-won material (Barratt Homes Development) used to backfill the 2011 remediation excavations and provide capping materials due to perched groundwater in the south of the site. At present all surface materials are therefore not deemed suitable for a residential development end use.

6.15. When defining the potential risk to future end users of the site, a receptor distinction is made within a risk assessment approach. A receptor is something that could be adversely affected by a contaminant, for example a person, controlled waters (river or groundwater), an organism, an ecosystem or Part 2A receptors such as buildings crops or animals.

6.16. In relation to the proposed redevelopment, relevant potential receptors are considered to include:

- Future site users and maintenance workers;
- Construction workers;
- Third parties during construction (adjacent site users and adjacent residents);
- The underlying superficial Secondary A aquifer (Taplow Gravel Member);
- The built environment (new buildings and below ground infrastructure / utilities).

6.17. In the context of the site investigations and PRA, the area of open mosaic habitat is defined as part of the shallow made ground soil profile. LCRM guidance dictates that to ensure risks are not posed to future site users the land owner / developer must clearly identify how to break the source, pathway, receptor model. This assessment is traditionally incorporated as part of a remediation strategy, which would include the required capping solution to avoid human health risks. The capping solution may include; built form such as roads, pavement and buildings, membranes to prevent gas and vapour intrusion and imported sub-soils and topsoil's for landscaping purposes.

6.18. The majority of the site in its current condition is suitable for commercial open storage end use but poses a risk to human health in a residential setting. Those risks are based on the type and concentration of contaminants identified, which includes vapour / gas intrusion through foundations and buildings. If the open mosaic habitat was retained in its current form and future residents were permitted to access the area of open mosaic habitat, then there would be a serious risk that they may become exposed to gasworks contaminants from shallow made ground soils.

6.19. If the area for retention/avoidance were to be segregated from the public (i.e. fenced off) due to the remaining contamination, then land would become isolated within the residential development footprint, with security arrangements in place to ensure that residents or members of the public could not gain access. This would inherently reduce the lands amenity potential and restrict its biodiversity with fencing or hoarding erected to prevent unauthorised access.

6.20. The process of remediating the site for residential end use requires stripping the current vegetation and upper made ground soils, exposing potential hotspots of contamination and historic gasworks infrastructure that may pose an on-going risk to the environment or impediment to the development. All materials excavated are pre-treated through complex mechanical segregation, screening and sorting. All soils and aggregates are then tested against a threshold criterion (to be agreed with the Local Planning Authority and Environment Agency) as part of an agreed remediation strategy.

6.21. As part of the remediation strategy a cover system to break the source-pathway-receptor model could then be implemented, which would follow the principles of development with hard standing, roads, built form, or imported sub-soils and topsoil's providing the human health cover system. The area can then be utilised within the development without the requirement of restricting public or resident access.

6.22. When assessing a site under the principles of sustainable development, materials that are excavated have the potential to be reused on-site (where suitable against an agreed criteria) or disposed off-site where pre-treatment is not possible. The pre-treatment of material to promote re-use breaks up cohesive soils and removes fragments of brick, concrete, metal, plastic and wood (deleterious). The soils are tested in homogenised batches to ensure conformance against the agreed specification. Any open mosaic habitat land would be lost under this requirement, via an on-site processing and testing regime to meet the remediation strategy specification.

6.23. **Summary of avoidance**

6.24. The avoidance of all harm through retention of the habitat would not be feasible for the following reasons:

- If the area were to be remediated to be safe for public access then the open mosaic habitat would be lost;
- With no remediation, the area would not be safe and would need to be fenced off to prevent public access;
- This would be a lost opportunity to improve the local townscape and open up connections and permeability through the site, including new public open space and child playspace;
- The retention of the habitat and a piecemeal development of the remaining elements of the site would not meet the requirements of wider planning policy aims – it would significantly reduce the number of homes that could be delivered, with the site capable of delivering only delivering a small proportion of the 579 homes in the current scheme;
- This would not only fail to optimise the site, but would impact the viability of the development in a way that would effectively sterilise the regeneration of the site as the resultant quantum of housing would not be capable of funding the remediation of the site;

- The retention and segregation of the open mosaic habitat would gradually lead to a reduction in biodiversity value, as the bare ground and floristically rich elements would gradually be replaced through natural succession by rough grasses and Buddleia and Bramble scrub, which do not provide the same opportunities for invertebrates and other species;

- a fenced off area of open mosaic habitat that will transition to scrub will have adverse impacts in terms of visual amenity, affecting new residents, neighbours and visitors to the site.

6.25. Avoidance would clearly be a disproportionate response to the mitigation hierarchy. The short term ecological benefits of avoidance through retaining the habitat do not outweigh the longer term disbenefits, which include the sterilisation of the site and a decline in its biodiversity value.

Minimisation

6.26. Having discounted avoidance, the next step in the mitigation hierarchy is minimisation. In this context, a minimisation would involve the retention of a smaller area of open mosaic habitat.

6.27. In theory it would be possible to select a small area of the open mosaic habitat to retain, leaving more space for a residential-led redevelopment. However, whilst the reduction in the number of homes that could be delivered on the site would not be as great, the same issues as identified in the avoidance scenario would apply to the minimisation scenario.

6.28. There would still be reduction in the number of homes that could be delivered on the site, and/or the potential need to increase heights in other areas of the site in order to deliver a quantum of housing that would be capable of funding the remediation of the site. The movement throughout the site would be impinged, along with building footprints needing reconfiguration or reduction to avoid residential outlook from being harmed.

6.29. This option would also impact the provision of accessible open space and playspace limiting residents enjoyment of the development. In order to meet London Plan playspace requirements, an off-site playspace solution would need to be found or a further reduction in the number of homes to be delivered.

6.30. As with avoidance, there would be reduced opportunities to provide new public routes and open spaces. Large unusable areas that are closed off to the public would need to be incorporated into the development, contrary to the draft allocation, which seeks to open the site up to the public.

6.31. The overall result would evidently be a significantly compromised scheme that does not optimise the site and would not be outweighed by the benefits of retaining an area of open mosaic habitat that would decrease in biodiversity value over time. Such a scheme would have limited long term ecological benefits compared to a scheme which fully integrates ecological enhancements into the design.

6.32. From both an ecological perspective and in wider planning terms, it is evident that this would not achieve the best overall result.

Compensation

Off-site re-provision of same habitat

6.33. For off-site provision, both transposition of existing and re-provision of new open mosaic habitat off-site have been considered.

6.34. As per the contaminated land commentary in the avoidance section above, relocating the open mosaic habitat offsite would not be possible due to the nature of the existing soils, and the requirements of the remediation process.

6.35. Transposition of open mosaic habitat would involve the relocation of existing habitat to a new location. Where soils are to be disposed off-site, vegetation matter must be segregated from the soil matrix based on the acceptance criteria at waste disposal facilities.

6.36. It is therefore not practicable to excavate open mosaic habitat land for re-use off-site due to the inherent contamination risk, mechanical processing required and testing regime to ensure materials are accepted at a receiving site.

6.37. When transporting waste material off-site (Waste Regulations 2012), a stringent permitting process is adopted to either transport the material as a waste (under duty of care) to a site with an Environmental Permit or transfer materials under CL:AIRE Code of Practice (Hub and Cluster – as material would be designated as 'made ground', not 'naturally occurring') where materials are designated as a non-waste. In either case, materials have to be accurately characterised and tested to show conformance to the receiving sites acceptance criteria. There would still be a requirement for vegetation to be stripped, prior to materials being loaded onto lorries. This process would ultimately destroy the open mosaic habitat land and remove its biodiversity status meaning transposition of existing habitat off-site is not possible.

6.38. The provision of off-site habitats to compensate for losses of habitat within a site to development, where retention is not possible or feasible, can in some instances represent the best ecological outcome for a development proposal. It is noted that this principle is also enshrined within the Environment Act 2021, notwithstanding that the requirements in relation to biodiversity net gain are not applicable to these development proposals. As such, consideration has been afforded as to whether off-site creation would be feasible.

6.39. Whilst open mosaic habitat could in theory be delivered (as this is not an irreplaceable habitat), this would in the first instance require identification of an appropriate location which either constitutes existing built form, which would need to be demolished, or which comprises existing habitat which could be cleared and replaced with suitable substrates to provide this early successional habitat.

6.40. Even if a new open mosaic habitat could be created on another site, the same natural succession point as discussed in the avoidance section would apply. The off-site biodiversity gain would be temporary, as the bare ground and floristically rich elements would gradually be replaced through natural succession by rough grasses and Buddleia and Bramble scrub, which do not provide the same opportunities for invertebrates and other species.

On-site re-provision of alternative habitat

6.41. Having applied the mitigation hierarchy, it is clear that the only feasible, realistic option is to re-provide an alternative habitat that is integrated with the development, in accordance with planning policy aims and objectives. This takes account of the fact that the ecological significance of the existing habitat on the site lies primarily in the opportunities for supporting invertebrate species, rather than in the intrinsic value of the open mosaic habitat itself. Therefore, the priority should be securing the delivery and long term maintenance of a habitat that is capable of supporting invertebrates, rather than focussing on the open mosaic habitat. This option is discussed in the next section in the context of delivering biodiversity net gain.

8 years ago
Cleared site

No/negligible biodiversity value

Now
Part cleared, part scrub, part open mosaic

Higher biodiversity value – supports range of invertebrates

5 years in future
Open mosaic replaced by scrub and grassland

Lower biodiversity value – supports fewer species than open mosaic

Capture current value in re-provision of habitats

Higher biodiversity value – supports range of invertebrates

Maintain habitat and biodiversity value through management within development

Higher biodiversity value – supports range of invertebrates

7. Delivering Lasting Biodiversity Net Gain

7.1. This Feasibility Statement sets out how the recent emergence of open mosaic habitat at this site has resulted in a higher biodiversity value that is a function of the site having been vacated, partially remediated and then left to grow, which has allowed a temporary increase in biodiversity value. Had the site's historic use as a gasworks continued or had the site been maintained in its previous state as a cleared site, then there would have been no opportunities for the temporary increase in biodiversity value.

7.2. Whilst it is not feasible or desirable to retain the existing open mosaic habitat on site for the reasons discussion in section 6, we can recognise the biodiversity value and re-provide this in a way that is compatible with achieving the other aims of the redevelopment (housing, routes through, public space, attractive development).

7.3. This is in line with the good practice principles of achieving the best outcomes for biodiversity and delivering net gains that can have a lasting impact. This approach follows planning policy requirements for biodiversity and ecological enhancement, whilst also meeting wider aims of the allocation, and optimising the site. The creation of on-site habitats can ensure long lasting biodiversity value on site, through active management and maintenance.

Legislative and Policy Context

7.4. The current planning policy framework encourages biodiversity net gains but does not prescribe a methodology or quantum to be achieved.

7.5. Paragraph 174 of the NPPF states that planning decisions should provide net gains for biodiversity. London Plan Policy G6 states that development proposals should manage impacts on biodiversity and aim to secure net biodiversity gain. Core Strategy policy CS13 seeks to improve opportunities for residents to experience nature through the protection and enhancement of biodiversity. The Sites and Policies Plan Policy DM02 aims to protect and enhance biodiversity. Draft policy O15.3 requires development to contribute to net gains in biodiversity by incorporating features such as green roofs and walls, soft landscaping, bird and bat bricks and boxes, habitat restoration, tree planting and expansion and improved green links.

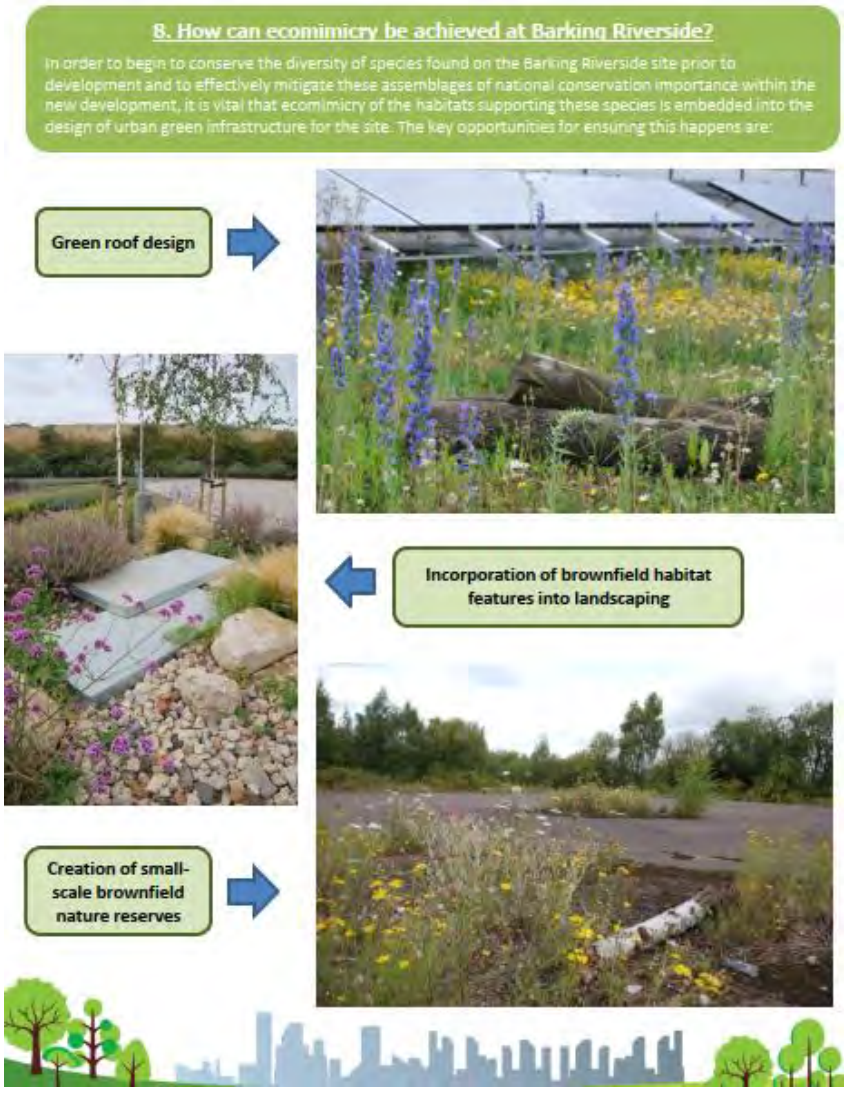
7.6. The Environment Act (2021) received royal assent in November 2021. The Act sets the mandatory requirement for development proposals to secure Biodiversity Net Gain, with a minimum threshold of 10% set out in the legislation. References to biodiversity value are to be calculated in accordance with the biodiversity metric produced and published by the Secretary of State. The Act sets out that pre-development biodiversity value is taken from the date of the application. As outlined in the letter from the Chief Planner dated 6 October 2023, it is confirmed that the mandatory biodiversity net gain requirements as outlined in the Environment Act will only apply to new planning applications made after January 2024 and therefore do not apply to this planning application.

7.7. Whilst the mandatory requirements under the Environment Act do not apply to this planning application, for illustrative purposes the Ecological Assessment contains a biodiversity net gain assessment using the metrics associated with the Environment Act requirement. As required by the Environment Act, the pre-development biodiversity value is taken from the date of the application.

7.8. To compensate for the loss of the open mosaic habitat and to deliver ecological enhancements, the Ecological Assessment has recommended the incorporation of biodiverse green/brown roofs that are capable of supporting invertebrates.

7.9. The design of the design and planting on the roofs associated with new buildings includes the provision of a diverse species mixture comprising a wide range of grassland and wildflower species. The planting mixture will include both plug planting of species of known value for invertebrates (including flowering species currently found on site, utilising the existing seed resource) and also allow for natural recolonisation of substrate as has occurred naturally on the site.

7.10. The roof will also incorporate features of specific benefit for invertebrate species, including areas of bare substrate (for Hymenoptera), rubble and brick piles, and wooden features, logs and/or brash. These measures have been incorporated into the landscape proposals. Variation in substrate type and depth will be provided, to maximise opportunities for this group. This approach, which aligns with the principles of 'ecomimicry', would serve to provide ideal opportunities for invertebrate species. This is an approach that has been adopted on other developments where the habitat provided by open mosaic habitat has been incorporated into a redevelopment scheme, such as at Barking Riverside[2].



[2] Connop, S. and Nash, C, UEL (2016) *Ecomimicry for Barking Riverside: Achieving local contextualised biodiversity-led multifunctional urban green infrastructure*

7.11. The Ecological Assessment identifies that the proposed development would deliver around 8% biodiversity net gain. The new habitats be secured for the lifetime of the development and actively managed in line with a landscaping management plan, secured by way of planning condition. This would deliver lasting biodiversity net gain. As discussed in section 6, this is a far better outcome than retaining an area of open mosaic habitat, which will gradually decrease in biodiversity value through natural succession.

APPENDIX 2

Information Obtained from GiGL (Summary Page)

eCountability
Managing your biodiversity risks and opportunities

In Partnership with

GiGL Greenspace Information for Greater London CIC
the capital's environmental records centre

THIS SUMMARY PAGE MAY BE PUBLISHED
THE FULL REPORT AND MAPS MAY NOT BE PUBLISHED IN THE PUBLIC DOMAIN

Ecological Data Search 22297dr - Summary Page

A 2000m ecological data search was carried out for site Land in Mitcham on behalf of Ecology Solutions on 24 Jun 2021.

The following datasets were consulted for this report:

- Statutory sites ✓
- Non-statutory sites ✓
- Protected species ✓
- London invasive species ✓
- Habitats ✓
- Open space ✓

Results

Statutory sites	No statutory sites and 7 LNRs
Non-statutory sites	19 SINCs
Areas of Deficiency	Present within search area
Geological sites	None present within search area
Species	
Protected and notable species	4586 species records
London invasive species	965 species records
Habitats	
BAP habitat suitability	Present within search area
Open space	Present within search area

The report is compiled using data held by GiGL at the time of the request. Note that GiGL does not currently hold comprehensive species data for all areas. Even where data is held, a lack of records for a species in a defined geographical area does not necessarily mean that the species does not occur there.

Permission
This data search report is valid until 24/06/2022 for the site named above.

Prepared by
24 Jun 2021

Prepared by eCountability Ltd (enquiries@ecountability.co.uk) on behalf of:
Greenspace Information for Greater London CIC Registered Office: 10 Queen Street Place, London EC4R 1BEA
community interest company limited by guarantee registered in England and Wales number 8345552
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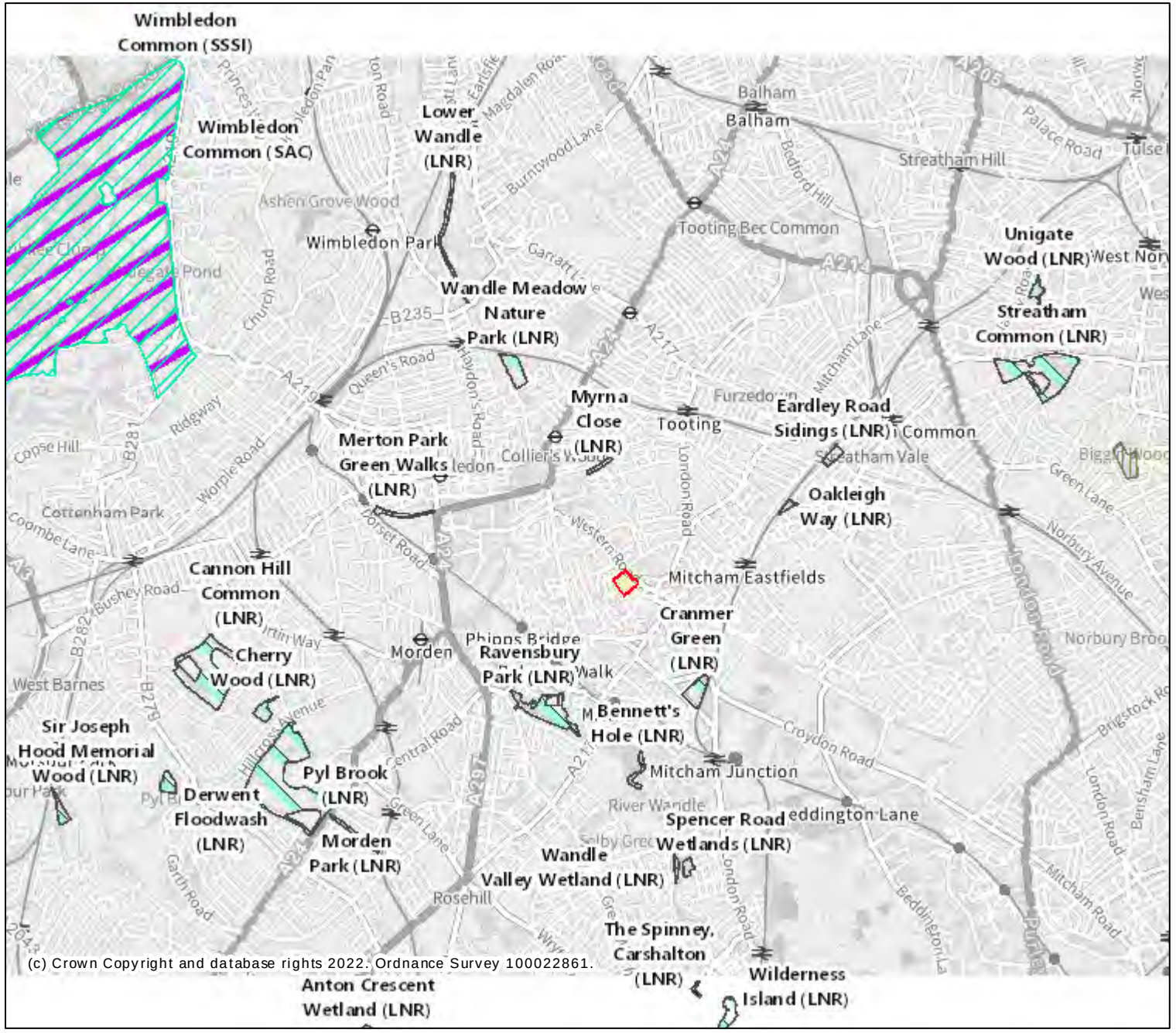
APPENDIX 3

Information obtained from MAGIC

9740: LAND AT MITCHAM GASWORKS



Legend

- Local Nature Reserves (England)
- National Nature Reserves (England)
- Ramsar Sites (England)
- Proposed Ramsar Sites (England)
- Sites of Special Scientific Interest (England)
- Special Areas of Conservation (England)
- Possible Special Areas of Conservation (England)
- Special Protection Areas (England)
- Potential Special Protection Areas (England)

Ancient Woodland (England)

- Ancient and Semi-Natural Woodland
- Ancient Replanted Woodland

Projection = OSGB36
xmin = 518700
ymin = 165800
xmax = 535400
ymax = 173600

0 1 2
km

Map produced by MAGIC on 18 October, 2022.

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APPENDIX 4

Technical Note: Invertebrate Scoping Survey
(Ecology Solutions, July 2023)

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9740: MITCHAM GASWORKS

TECHNICAL NOTE: INVERTEBRATE SCOPING SURVEY

JULY 2023

Introduction and Background

1. Ecology Solutions Limited was commissioned to undertake an invertebrate scoping survey of Land at the former Mitcham Gasworks site in June 2023, hereafter referred to as the application site.

2. The application site is a decommissioned gasworks located within the London Borough of Merton. The application site is bordered on all sides by residential and retail development with a small park situated adjacent to the western boundary.

3. This Technical Note summarises the methodology and findings of the invertebrate appraisal work undertaken and provides an assessment of the value of the land present within the application site for protected and notable invertebrate species / assemblages.

Survey Methodology

4. A survey was undertaken of the application site on 22nd June 2023 by an experienced entomologist with expertise in the identification of invertebrate species and assessment of habitats of value for protected and notable invertebrates.

5. The survey involved an assessment and evaluation of the suitability of the habitats present within the application site to support invertebrate assemblages, with particular consideration afforded to opportunities for protected and notable species and assemblages. The survey also entailed recording and mapping of invertebrate species observed to be using the application site.

6. The weather at the time of the site visit (conducted between 12:00 and 15:00) was sunny with minimal cloud cover, with temperatures ranging between 23°C and 26°C. As such, the conditions during the survey were appropriate to enable a robust assessment of the application site to be undertaken.

Survey Results

7. In structural terms, it is considered that the application site supports some areas which conform to that of an open mosaic at the present time, comprising areas of bare ground with intermittent ruderal vegetation. Surrounding the larger areas of bare ground is a species poor grassland with mixed ruderal vegetation and scattered patches of bare ground, primarily at the edges. Scrub primarily of Bramble *Rubus fruticosus* agg. and Buddleia *Buddleja davidii* was recorded to be colonising the application site from the boundary as well as from areas directly adjacent to structures on the hardstanding.

8. The habitat within the decommissioned gas holder does not constitute open mosaic, primarily being bare ground with extremely limited vegetation. The walls of the container are bare of any bryophytes, likely owing to the near ubiquitous iron oxide leaching from the bricks rendering the available space too acidic for a bryophytic community to establish[1].

9. Areas of dense scrub were also recorded to be present within the application site, primarily associated with the eastern and western boundaries. These areas clearly do not comprise or support open mosaic habitat and are of limited value to invertebrate species.

10. During the course of the survey, a number of butterflies were noted at the application site; specifically, Marbled White *Melonargia galathea*, Common Blue *Polyommatus icarus,* Small Skipper *Thymelicus sylvestris,* Meadow Brown *Maniola jurtina* and Orange-tip *Anthocharis cardamines*. All of these species are identified to be of Least Concern in conservation terms, as they are relatively common and have a wide distribution.

11. The survey identified that areas of bare ground on site are being used extensively by ground nesting Hymenoptera, with this identified to represent the area of the site of greatest value for invertebrate species at the present time.

12. Floral resources are present within the application site boundary although these are limited primarily to Bramble and Buddleia which have colonised the application site. The lack of a varied nectar resource is considered to place constraints on the variety of invertebrates that will utilise the application site, both currently and potentially in the future. Given the relative isolation of the site from other habitats in the local area (see below), it is considered that the diversity of Flies (Diptera) and True Bugs (Hemiptera) that the application site will support will be limited.

Assessment

13. Although the site is considered at present to support areas which may currently be considered as open mosaic, it is my opinion that the opportunities it represents to invertebrates are limited in their longevity. Rather than an established open mosaic that is stable and consistent (such as with a site where there is extensive contamination resulting in a nutrient poor substrate unlikely to develop into grassland / scrub), it is apparent that this site is in a transitional

[1] Rola K, Pl ek V. *The Utility of Ground Bryophytes in the Assessment of Soil Condition in Heavy Metal-Polluted Grasslands*. Plants (Basel). 2022 Aug 11;11(16):2091. doi: 10.3390/plants11162091. PMID: 36015394; PMCID: PMC9416651

phase, which at this point in time resembles open mosaic but is unlikely to remain as such.

14. It is apparent from aerial photography that the habitats present have become established fairly recently, with evidence that the application site was essentially devoid of vegetation eight years ago. Without intervention or management, areas of land which currently support open mosaic habitat will likely be lost ultimately to dense scrub within around 5-10 years, at that point offering extremely limited opportunities for invertebrates.

15. As such, the potential opportunities that the site currently provides for more notable invertebrate species and assemblages is essentially associated with this transitional habitat, which would be lost in a 'do nothing' scenario should this site not come forward for development.

16. In the context of the wider landscape, with the sole exception of Mitcham Common (which is situated circa 1km to the east at its closest point), it is also important to highlight that the application site is relatively isolated from habitats in the local area that could be of value for notable invertebrate species and assemblages (including both brownfield sites and areas of semi-natural habitat). As a result, there is limited connectivity between the application site and other sites in the local area that could act as sources of colonising invertebrates. The situation therefore in respect of this site is not equivalent to brownfield sites within the Thames Gateway area, where there are a series of large formerly industrial brownfield sites in relatively close proximity.

17. Whilst it is apparent that some invertebrate species will and indeed have colonised the application site, in light of the fact that the areas of open mosaic are considered to represent a transitional habitat which would be lost due to succession, it is unlikely that an invertebrate species assemblage of significant biodiversity value has become established to date, nor that it will become established in the medium to long term, particularly considering the ephemeral nature of the site.

Summary and Conclusions

18. In summary, the invertebrate scoping survey identified that parts of the application site now support open mosaic habitat, such that there are superficially suitable opportunities for invertebrate species and assemblages within these areas. However, taking into account the fact that these habitats have only become established recently (in the last eight years), and that the application site is situated in an urban area largely absent from potential sources of colonising invertebrates such as brownfield and semi-natural habitats, it is unlikely that the application site supports an invertebrate assemblage of particular significance at the present time.

19. Moreover, it is anticipated that the open mosaic present within the site represents a transitional habitat that is likely to be lost in the short to medium term, such that the existing opportunities for invertebrates would decline with further establishment of grassland and ultimately scrub habitats. On this basis, the value of the application site for invertebrates is expected to decline in the absence of any intervention or management, such that the current opportunities represent a 'snapshot' of a period when the application site is of elevated potential for this group.

APPENDIX 5

Technical Note: Terrestrial Invertebrate Survey Report (Ecology Solutions, November 2023)

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9740: LAND AT MITCHAM GASWORKS

TECHNICAL NOTE: TERRESTRIAL INVERTEBRATE SURVEY REPORT

DECEMBER 2023

Introduction

1. Ecology Solutions was commissioned to undertake detailed invertebrate survey work of Land at Mitcham Gasworks, 49 Western Road, London, CR4 3ED, hereafter referred to as the site.

2. The site comprises a decommissioned gas works located within the London Borough of Merton. The site is bordered on all sides by areas of existing development, with a small area of open space along the south-western boundary.

3. This Technical Note outlines the methodology and findings of the survey work undertaken in August and September 2023, and provides a detailed assessment of the current (Summer 2023) value of the site for protected and notable invertebrate species and assemblages.

4. As outlined in the updated Ecological Assessment (December 2023), updated survey work undertaken at the application site in 2023 identified significant [redacted] to the composition of habitats present within the site. These [redacted] have occurred following disturbance associated with the completion of the remediation works in late 2021 (i.e. after original survey work was undertaken) and also disturbance and fly-tipping associated with the temporary use of the application site by travellers in Summer and November 2022, with subsequent recolonisation of areas of bare ground.

5. On this basis, it is important to acknowledge that the findings of the detailed survey work undertaken in August and September 2023 pertain to the current baseline.

Survey Methodology

6. As outlined in the Addendum to the Ecological Assessment (June 2023), an invertebrate scoping survey was undertaken on 22 June 2023. This survey identified that parts of the site now support Open Mosaic Habitat. This survey

also identified areas of grassland with low species diversity, with areas of hardstanding and areas of Buddleja, Bramble and other scrub also present, encroaching into the site. The areas of bare ground and more sparse areas of vegetation align closely with areas which were subject to disturbance associated with the remediation works in late 2021 and disturbance and fly-tipping from illegal use by travellers in 2022.

7. Invertebrate sampling surveys were subsequently undertaken at the site on 30 August 2023, 13 September 2023 and 14 September 2023. Survey work involved extensive specimen collection using a range of methods, so as to collect a representative sample of the invertebrate species and assemblages present at the time of the survey.

8. Given the limited size of the site, it was deemed that 3 days sampling in total would be proportionate to produce a representative sample of the assemblages present, as recommended by the Council's ecological advisor (Furesfen).

9. Table 1 below summarises the survey dates and weather conditions at the time of the work.

Date	Weather
30/08/2023	Partial cloud, 18-21°C, 11.8 mph NWN breeze & 50% humidity
13/08/2023	Partial cloud – light rain, 15-19°C, 6.2 mph ENE breeze & 90% humidity
14/08/2023	Partial cloud, 13-21°C, 6.8 mph NNE breeze & 60% humidity

Table 1. Survey date & weather conditions

10. The following survey methodologies were employed to collect samples during each of the survey visits:

11. *Direct observation.* This method is straight forward and involved visual inspection of obvious specimens in the field, but also extended to the identification of crickets via stridulation and visual evidence such as leaf galls.

12. *Sweep-Netting.* A large hand held net was swept through vegetation at various heights in a figure of eight motion, with collected specimens then transferred to containers via hand collection or pooter.

13. *Beating trees and bushes*. A cloth tray was held under branches which were then taped firmly with a stick to dislodge any invertebrates clinging to the branch. This method is effective at producing specimens of most arboreal species.

14. *Suction Sampling.* A large handheld suction device was used to suck up invertebrates from deep within vegetation and from the ground. Specimens were collected in a cloth bag, and then processed. This method is particularly effective for the collection of flightless or weak flying invertebrates.

15. *Light Trapping.* This methodology entailed setting up Mercury-vapour light traps that are left over night. Night flying insects such as moths were drawn to the trap and settle inside on cardboard egg cartons. Mercury-vapour traps emit wavelengths of light particularly attractive to night flying insects.

16. All collected specimens were either identified on site in the case of lepidoptera, or pinned and identified under a microscope using various keys. Identification

was undertaken by an experienced entomologist with expertise in the use of keys to ensure accurate identification of samples).

Survey Constraints

17. The completion of surveys in the late Summer / Autumn period necessarily represents a snapshot covering this part of the survey season. However, given the size of the site and in light of advice from the Council's ecological advisor, it is considered that the survey work undertaken was appropriate to identify a representative sample of the invertebrate assemblages present, and therefore ascertain the current position.

18. Due to ground contamination, it was not possible to utilise the pitfall trap survey methodology during the work due to Health and Safety reasons. This necessarily results in a reduced sample of Coleoptera. However, more extensive suction sampling was employed in order to address the relative paucity of specimens, such that this is not considered to be a fundamental constraint to the survey work undertaken.

19. Whilst light rain was encountered on 13 September 2023, which may have resulted in fewer insects being on the wing, rainfall was sporadic with drier periods in the day. Sampling was therefore still undertaken during these periods.

Survey Results

20. In the context of this report, terrestrial invertebrates are specifically identified as those taxa procured from terrestrial environments. Consequently, while the developmental stages of dragonflies, damselflies, caddisflies, certain hoverflies, some soldier flies, and similar organisms are logically excluded, we have opted to include the adults of these groups if they were observed in flight, captured in a malaise trap, or otherwise extracted from a terrestrial habitat. This decision is based on the understanding that the presence of an adult insect does not necessarily indicate breeding activity on the site. In this context, the ecological role that the site plays for the insect is of a distinct nature.

21. Appendix 1 provides a comprehensive inventory of terrestrial invertebrate taxa identified in the current survey. The list is enhanced with formal National Status codes, specifically those surpassing the designation of "Least Concern . Further elucidation on these status codes can be found in Appendix 2.

22. A total of 128 species were identified during the course of this survey, including a limited number of conservation interest. The survey did not record any legally protected invertebrate species utilising the site.

23. A total of nine Species of conservation interest were recorded, 1 UK BAP Species (Powdered Quaker *Orthosia gracilis*), 1 Red Data Book 3 Species (the bee *Hylaeus dilatatus*), 1 Notable A species (the bee *Lasioglossum pauxillum*), 3 Notable B species (Variegated Lady Beetle *Hippodamia variegata*, Small Spurred Digger Wasp *Nysson dimidiatus* & Hairy Bug *Calosirus terminatus*) as well as 3 Nationally Scarce species (Wolf Spider *Pardosa agrestis*, the spider *Ballus chalybeius* & the beetle *Bathysolen nubilus*). Further information in relation to these species is provided below.

UK Biodiversity Action Plan (UK BAP) Priority Species/Section 41 Species:

24. The UK Biodiversity Action Plan (UK BAP) identified priority species between 1995 and 1999, aiming to address the most threatened species through conservation efforts. In 2007, a revised list was created after a 2-year review, expanding the number of priority species from less than 600 to 1150. Subsequently, 123 species no longer meeting the criteria were de-listed. Due to devolution and evolving conservation priorities, much of the focus shifted from a UK-level to a country-level approach.

25. In July 2012, the UK BAP was succeeded by the UK Post-2010 Biodiversity Framework. The list of priority invertebrate species is available at http://jncc.defra.gov.uk/page-5169. The UK's list of priority species remains significant, influencing statutory lists for conservation priorities in England, Scotland, Wales, and Northern Ireland as outlined in relevant legislation.

UK BAP (Section 41 Research only)	Species:	**Powdered Quaker - Orthosia gracilis**
	Family:	Noctuidae
	Order:	Lepidoptera
	Habitat:	Varied habitats across England.
	Description:	With a wingspan of 35-40 mm, this species, widely found in England, Wales, and Ireland (less so in Scotland), exhibits variable coloration. Individuals feeding on bog myrtle in Scotland and some southern regions are more diverse. Larvae, often on sallows, are paler elsewhere. Flying in April and May, adults are attracted to light and various flowers, including sallow blossom.
Red Data Book 3	Species:	**Dilated Masked Bee - Hylaeus dilatatus**

	Family:	Colletidae
	Order:	Hymenoptera
	Habitat:	Often locally common on calcareous grassland; reported from coastal sites, fens, and open woodland.
	Description:	Formerly classified as Hylaeus annularis (Kirby, 1802), recent taxonomic revisions have led to name [redacted] In the UK, the subgenus Lambdopsis includes Hylaeus dilatatus and H. annularis (previously known as H. spilotus). Distinguishing features include circular paraocular markings in females and dilated, yellow-and-black-marked, sub-rectangular antennal scapes in males.
Notable A	Species:	**The Bee - Lasioglossum pauxillum**
	Family:	Halictidae
	Order:	Hymenoptera
	Habitat:	Mainly open sites, including chalk grassland and woodland.
	Description:	Lasioglossum pauxillum is identified by the diagnostic feature of the broad and rounded apical teeth on the inner spur of the female's hind tibia in Britain, contrasting with narrow and pointed teeth.
Notable B	Species:	**Variegated Lady Beetle - Hippodamia variegata**
	Family:	Coccinellidae
	Order:	Coleoptera
	Habitat:	Fields, meadows, gardens, and shrubs; prefers dry, rough vegetation.
	Description:	Hippodamia variegata, commonly known as the Adonis ladybird or variegated ladybug, is a species of ladybird native to the Palearctic region but found in the Nearctic and Oriental regions as well. Introduced to various countries for pest control, it thrives in fields, meadows, and gardens. Identified by its 3–5.5 mm size, elongated body, and distinctive red or orange elytra adorned with variable black spots.
	Species:	**Small Spurred Digger Wasp - Nysson dimidiatus**

	Family:	Crabronidae
	Order:	Hymenoptera
	Habitat:	Short sward & bare ground.
	Description:	Nysson wesmaeli, a small red and black wasp, is a cleptoparasite of Harpactus tumidus, found in sandy areas. Recorded across England, Wales, and Europe, it's notable but scarce in heathlands, coastal dunes, and sandpits. Univoltine, active from June to September, it frequents umbellifer flowers.
	Species:	**Hairy Bug - Calosirus terminatus**
	Family:	Lygaeidae
	Order:	Coleoptera
	Habitat:	Various Apiaceae such as Anethum, Anthriscus cerefolium, Apium graveolens.
	Description:	Calosirus terminatus (Herbst, 1795) is associated with Apiaceae and exhibits gall formation during its larval stage. The larvae tunnel in petioles, stems, and occasionally the root crown. While some sources mention gall formation, others, like Hering, deny it. The larvae are known to mine in lower leaves, starting from the petiole, according to Robbins. The host plants include various Apiaceae.
Nationally Scarce	Species:	**Wolf Spider - Pardosa agrestis**
	Family:	Lycosidae
	Order:	Araneae
	Habitat:	Primarily inhabiting sparsely vegetated clay soil, clay and chalk pits, under-cliffs, and dry banks above saltmarsh.

	Description:	This spider species is likely confined to the southern half of England, with coastal records potentially related to P. purbeckensis. It has a widespread distribution in Europe. Habitat-wise, it predominantly resides in sparsely vegetated clay soil, clay and chalk pits, under-cliffs, and dry banks above saltmarsh. Abundant in regions with Oxford clay, chalk, and London clay, it's often found in herb-rich meadows. Active mainly from May to July, occasionally extending to September.
	Species:	**The Spider - Ballus chalybeius**
	Family:	Pentatomidae
	Order:	Araneae
	Habitat:	Mostly on the fringes of deciduous forests, on broad-leaved bushes and trees, particularly oaks, and in the grass.
	Description:	A small and compact spider, the female measures 3 to 4 mm with a brown abdomen featuring a faint light brown pattern and two dark spots. The carapace is brown with a subtle light pattern, and the legs are pale with a black spiral pattern, slightly darker on pair I. Palps are darker at the top and pale at the ends. The male, 2.5 to 3.5 mm, has a black-brown abdomen and carapace with minimal light markings. Legs are pale with a black spiral pattern, while pair I is black-brown, thickened, and enlarged. Palps are black-brown with white hairs at the tip. In young males, the abdomen and carapace are initially as brown as the female's.
	Species:	**The Bug - Bathysolen nubilus**
	Family:	Anthicidae
	Order:	Hemiptera
	Habitat:	Dry and sparsely-vegetated habitats.

	Description:	This squash bug is identified by its short and broad pronotum without spines, featuring pale sides. The scutellum has a pale tip, and the 1st antennal segment is notably broad, wider than the 4th. As a ground-dwelling species, it feeds on plants from the pea family, especially Black Meddick (Medicago lupulina). Nymphs are present from June to August. Historically, it has been very scarce.

Table 2. Species of conservation status found during the 2023 survey

Assessment

26. As outlined above, a total of 128 species were identified within the site over the course of the survey. Given the small size of the site, as well as the thoroughness of surveys during the August - September period, provides confidence that the identified species are representative of the invertebrate species and assemblages present on site as of 2023.

27. It is therefore considered that the survey work undertaken is robust to allow consideration of the current value of the site for invertebrate species (and in so doing the value of the open mosaic habitats present).

28. Table 3 below provides a summary regarding invertebrate species recorded at the site which have been identified to be of formal conservation interest:

National Status	Number of species
UK BAP species	0
UK BAP research only moths	1
Red Data Book category 1 species	0
Red Data Book category 2 species	0
Red Data Book category 3 species	1
Red Data Book category K species	0
Notable A	1
Notable B	3
Nationally Scarce species	3
Nationally Local species	0
Total species of conservation status	9
Nationally common species	119
Total of all species	128
% of species that are of conservation status	7%

Table 3. Conservation categories of species recorded in 2023

29. It is evident from the table that the vast majority of invertebrate species recorded at the site during the survey work represent common and widespread species, with only 7% recorded to have conservation status in their own right. However, further consideration is required to consider the extent to which the site is of value for notable species and assemblages, to quantify the invertebrate interest present at the site in 2023.

30. Guidance with regard to the assessment of importance for sites was developed by Colin Plant Associates, in the form of provisional invertebrate assessment criteria which were submitted to CIEEM. In the absence of any finite or confirmed guidance, this has been used to assist with quantifying the level of significance of the site for protected and notable invertebrates.

31. Table 4 below represents an extract from this provisional assessment criteria document.

Significance	Description	Minimum qualifying criteria
International	European important site	Internationally important invertebrate populations present **or** containing RDB 1 (Endangered) species **or** containing any species protected under European legislation **or** containing habitats that are threatened or rare at the European level (including, but not exclusively so, habitats listed on the EU *Habitats Directive*).
National	UK important site	Achieving SSSI invertebrate criteria (NCC, 1989) **or** containing RDB2 (Vulnerable) **or** containing viable populations of RDB 3 (Rare) species **or** containing viable populations of any species protected under UK legislation **or** containing habitats that are threatened or rare nationally (Great Britain).
Regional (for border sites, both regions must be taken into account)	Site with populations of invertebrates or invertebrate habitats considered scarce or rare or threatened in south-east England	Habitat that is scarce or threatened in the region **or** which has, or is reasonably expected to have, the presence of an assemblage of invertebrates including at least ten Nationally Notable species **or** at least ten species listed as Regionally Notable for the *English Nature* region in question in the Recorder database or elsewhere **or** a combination of these categories amounting to ten species in total.
County (for border sites, both counties must be taken into account)	Site with populations of invertebrates or invertebrate habitats considered scarce or rare or threatened in the county in question	Habitat that is scarce or threatened in the county **and/or** which contains or is reasonably expected to contain an assemblage of invertebrates that includes viable populations of at least five Nationally Notable species **or** viable populations of at least five species regarded as Regionally Scarce by the county records centres and/or field club.
District	Site with populations of invertebrates or invertebrate habitats considered scarce or rare or threatened in the administrative District	A rather vague definition of habitats falling below county significance level, but which may be of greater significance than merely Local. They include sites for which Nationally Notable species in the range from 1 to 4 examples are reasonably expected but not yet necessarily recorded and where this omission is considered likely to be partly due to under-recording.
Local	Site with populations of invertebrates or invertebrate habitats considered scarce or rare or threatened in the affected and neighbouring Parishes (except Scotland, where the local area may best be defined as being within a radius of 5 kilometres	Habitats or species unique or of some other significance within the local area.
Low significance	—	Although almost no area is completely without significance these are the areas with nothing more than expected "background" populations of common species and the occasional Nationally Local species.

Table 4. Criteria for site assessment based on invertebrate species quality (Colin Plant Associates)

32. The guidance emphasises that whilst assessing a site in light of its significance for invertebrate species is based on specified criteria, it is imperative to assess the site within the broader context of other sites featuring comparable macro- and micro-habitats at the same geographical category level. Additionally, the notes highlight that criteria falling below those for National and International significance should be approached with flexibility.

33. As a result, it is clear that professional judgment must be applied by the suitably qualified and experienced ecologist, utilising both data from the survey work undertaken in addition to other information.

34. In light of the survey evidence summarised above, it is apparent that the site at present does support a level of elevated invertebrate value. As such, it would not be considered to be of 'Low' significance.

35. However, comparison of the findings in terms of species with conservation status against the criteria equally indicates that this is clearly not a site of high or very high significance, falling far short of the minimum qualifying criteria in respect of international, national, regional and county significance. This initial assessment therefore indicates that the site would, as of late 2023, be likely to fall within either district or local importance in terms of its current value for invertebrate species.

36. In order to provide further clarity to assist with this judgment, the survey results have been considered in light of the Pantheon database tool. Pantheon was developed collaboratively by Natural England and the Centre for Ecology & Hydrology and serves as a robust platform for analysing invertebrate sample data.

37. This tool, conceived as an evolution from the Invertebrate Species-habitat Information System (ISIS), contributes significantly to the understanding of resources and structures utilized by invertebrates within specified sample locations, thereby aiding conservation efforts.

38. Pantheon's functionality allows users to import lists of invertebrates, referred to as "samples," facilitating a comprehensive analysis. The tool matches species to their preferred names in the UK Species inventory and integrates various data, including associated habitats, assemblage types (derived from ISIS), conservation status, habitat fidelity scores, and other relevant information. The results are presented through numerical scores, offering insights into site quality, species ecology, and assisting in informed management decisions by highlighting key ecological resources.

39. Notably, Pantheon focuses on a subset of macro-invertebrate taxa, encompassing over c13,000 species, approximately a quarter of the estimated total macro-invertebrate fauna (37,000). The tool is limited to taxa and families where sufficient ecological information ensures a fair level of coding accuracy, covering species like beetles, flies, true bugs, moths, bees, and others primarily found in England.

40. Pantheon's development has its roots in ISIS, originally created to monitor invertebrate assemblages based on strict survey protocols. Over time, Pantheon evolved to address user feedback, leading to its launch in April 2018 as a more versatile and user-friendly version. Unlike its predecessor, Pantheon is not solely tied to monitoring sites and is accessible online.

41. This approach helps minimise potential observer bias that could result from humans pre-selecting invertebrate habitats, like choosing logistically convenient compartments. The Pantheon system shifts from the traditional method, allowing invertebrates to reveal features to the observer that might have been overlooked in some cases.

42. The results of this analysis are presented in Table 5 below.

Broad biotope	Habitat	SAT	Code	No. of species	% representation	SQI	Species with conservation status	Conservation status	Reported condition
open habitats	-	rich flower resource	F002	9	4	178	2	[Na]|RDB 3	Unfavourable (9 species, 15 required)
open habitats	-	scrub edge	F001	4	2	100	-	-	Unfavourable (4 species, 11 required)
open habitats	short sward & bare ground	open short sward	F112	3	2	300	2	NS|Nb	Unfavourable (3 species, 13 required)
open habitats	short sward & bare ground	bare sand & chalk	F111	2	<1	250	1	NS	Unfavourable (2 species, 19 required)
open habitats	-	scrub-heath & moorland	F003	1	<1	100	-	-	Unfavourable (1 species, 9 required)
open habitats	short sward & bare ground	exposed sea-cliff	F113	1	2	400	1	Nb	-

Table 5. The Broad & Specific assemblage types represented by the invertebrates recorded on site.

43. The results from the Pantheon database indicate that the site does indeed supports Open Mosaic Habitat and is of elevated invertebrate interest. However, whilst the assessment identifies that the site is of elevated interest in respect of two habitat subcomponents; namely, the sub components of bare ground and rich flower resource, in all cases it is assessed to be in unfavourable condition at the present time based on the current species complement present.

44. This is perhaps unsurprising given the relative isolation of the site from other sites likely to be of elevated value for invertebrates in the local area. As outlined in the updated Ecological Assessment, the only other site likely to be of elevated value for invertebrates in the local area is Mitcham Common, such that the species which have colonised the site are anticipated to have come from this location.

45. It is axiomatic that the completion of survey work only represents a 'snapshot' at any given moment in time. It is therefore important to consider and compare the current situation at the site with both recent history and the future baseline, were the site not to come forward for development.

46. As set out in detail in the updated Ecological Assessment, total site clearance took place in 2012 with regular disturbance across the site until 2015 as part of initial site-wide remediation works.

47. Since this time, the site has naturally vegetated with grassland and scrub arising. However, further disturbance occurred to parts of the site in 2020/21, due to additional site clearance works associated with decommissioning. As a result, this has resulted in a position whereby, at the current time, there is elevated diversity across the site in terms of vegetation structure, from a position of negligible habitat for invertebrates (and indeed any faunal species) to a relatively poor monoculture of grassland, to more varied habitat.

48. Moreover, for the reasons set out in the Ecological Assessment, in the absence of any intervention or disturbance it is reasonable to anticipate that the habitats will continue to develop over time to grassland and ultimately Buddleja and Bramble dominated scrub. Whilst the timescales associated with this will depend on a variety of factors, the absence of disturbance or other physical intervention at the site would certainly lead to the loss of OMH, as ruderal and rough grassland species become dominant replacing the mosaic of bare ground and flower rich resources.

49. It is therefore important to consider the findings of the survey as representing an elevated level of importance for this group at the present time, albeit one where Open Mosaic Habitats are identified to be in unfavourable condition. However, it is important to note that this does not indicate a sustained, long-term baseline but one which is currently at a 'peak' in terms of the opportunities that it provides for invertebrates.

50. There is therefore no evidence to indicate that the site will continue to support opportunities for notable species and assemblages in the long term, that would enable it to provide a stepping stone or more permanent parcel of ideal habitat for such species as opposed to a temporary refuge for individuals which may be attempting to disperse from Mitcham Common.

51. As a result, taking into account the limited number of notable species recorded, the Pantheon assessment, history of the site and the geographical context, it is considered that on the basis of the survey results and assessment that the site would currently qualify as being of Local significance for invertebrate species.

Appendix 1: Species recorded on site during the course of the survey 2023

Ground Sac Spider - Clubiona terrestris

Family: Clubionidae
Order: Araneae
Status: -
Habitat:
Description: Clubiona terrestris, a common nocturnal hunter in the UK, features a female with a body size of 6-7 mm. The abdomen displays colors ranging from yellowish to reddish-brown. This spider is frequently found residing in leaf litter, low vegetation, or beneath bark or stones.

Pale Paidiscura - Paidiscura pallens

Family: Linyphiidae
Order: Araneae
Status: -
Habitat: Preferring shrubs, lower branches of evergreen and broad-leaved trees.
Description: Widespread in Britain, becoming scattered in uplands and the north, this spider is common in western and central Europe. Constructing webs on shrubs and lower tree branches, especially oak, it also appears on herbaceous vegetation and leaf litter. Identified by its distinctive sputnik-shaped egg cocoon, both male and female spiders mature from late spring to mid-summer, with occasional sightings in autumn and winter.

Wolf Spider - Trochosa terricola

Family: Lycosidae
Order: Araneae
Status: -
Habitat: Trochosa terricola thrives in woodlands, grasslands, and heathlands, preferring drier conditions, often under stones or logs.
Description: Trochosa terricola, the ground wolf spider, is widespread in Western and Central Europe, often found in woodlands and heathlands. Males are 7–9 mm, females 7–14 mm. Active March to November, it's preyed upon by pompilid wasps. Holarctic distribution, absent from Iceland, common in Great Britain.

Long-bodied Crab Spider - Tibellus oblongus

Family: Philodromidae

Order: Araneae
Status: -
Habitat: Adaptable to a variety of dry or damp habitats, ranging from sand-hills to various grasslands, with a preference for longer herbage.
Description: Recorded at altitudes from 0m to 700m. With a recorded altitude range of 0m to 700m, T. oblongus is widespread in the southern half of Britain but becomes scattered in the west and north. It is also found throughout western and central Europe. This spider is adaptable, occurring in various dry or damp habitats, with a preference for longer herbage. Adults, active mainly from May to July, include females occasionally persisting into autumn. Common in the south, it is more localized and restricted in the north, occasionally locally abundant.

Nursery Web Spider - Pisaura mirabilis

Family: Pisauridae
Order: Araneae
Status: -
Habitat: grassland, woodland, field edges, heathland, gardens, and marsh edges.
Description: Widespread in the southern half of Britain, with a scattered distribution in the north and central Scotland, this species is also common in western and central Europe, reaching southern Norway. It inhabits diverse environments like grassland, woodland, field edges, heathland, gardens, and marsh edges. The spider, known for its color variability, exhibits visible polymorphism likely influenced by predation. Active mainly from May to July, mating involves the male presenting prey to the female. The female, demonstrating maternal care, carries the egg-cocoon until constructing a protective web for the young. This care, however, is vulnerable to ichneumon wasps.

Copper Sun Jumping Spider - Heliophanus cupreus

Family: Salticidae
Order: Araneae
Status: -
Habitat: found in diverse habitats such as woodlands, grasslands, raised bogs, coastal cliffs, shingle beaches, and disturbed areas like quarries.
Description: The spider is commonly located in drier sections of these habitats, often within litter or under stones during resting periods. Adults are active mainly in May, June, and July, with females occasionally persisting into the autumn.

Yellow-legged Sun Jumping Spider - Heliophanus flavipes

Family: Salticidae
Order: Araneae
Status: -

Habitat: found in diverse habitats such as woodlands, grasslands, raised bogs, coastal cliffs, shingle beaches, and disturbed areas like quarries.
Description: This spider species is widespread in the southern half of Britain and central eastern Scotland but is sporadic or absent in upland areas and much of the north. It inhabits similar environments to H. cupreus, occurring in the field and shrub layers and on lower branches of trees. The species seems to favor sunny conditions, especially in northern Britain. Adults, both males and females, are typically found from May to July, with females occasionally persisting into September and, on one occasion, December.

[redacted] Jumping Spider - Zora spinimana

Family: Salticidae
Order: Araneae
Status: -
Habitat: Commonly found in grassland, particularly near the ground in grass roots, leaf litter, or under objects. Its habitat extends to heathland, open woodland, and raised bogs.
Description: Zora spinimana, a prowling spider in the Miturgidae family, has a Palearctic distribution and serves as the type species for the genus Zora. Females measure 5-7.7 mm, males 4.5–5 mm, with distinctive features compared to Z. silvestris. They exhibit unique ventral spines and prefer grassy habitats.

Merian's Metellina Spider - Metellina merianae

Family: Tetragnathidae
Order: Araneae
Status: -
Habitat: Adaptable to various habitats,
Description: The Orb-Weaving Spider (Metellina merianae) is widespread in Britain, found in western and central Europe extending to Georgia. It creates orb webs in shady, damp areas but hides during the day. Common in various habitats, including boathouses, cellars, burrows, trees, and caves, especially near water seeps. Often found under soil overhangs in woodlands and moorlands up to 650m altitude. Both sexes are present throughout the year, with activity peaks in late spring/early summer and late summer/autumn. Common and potentially abundant, especially in northern regions.

The Spider - Anelosimus vittatus

Family: Theridiidae
Order: Araneae
Status: -
Habitat: Trees and tall plants in a wide variety of habitats, perhaps with a preference for oaks.

Description: Anelosimus vittatus is a small spider found in north-western and central Europe, extending to southern Norway. Identified by a rich brown band along its abdomen, it constructs scaffold webs on bushes, trees, and tall plants across diverse habitats, with a possible preference for oaks. This spider belongs to the genus Anelosimus within the Theridiidae family.

Black-and-yellow Spider - Theridion melanurum

Family: Theridiidae
Order: Araneae
Status: -
Habitat: Synanthropic, commonly found in and around buildings.
Description: Recorded at altitudes ranging from 0m to 300m. This widespread species is common in England but more locally distributed in the southwest and Wales, with limited presence in the north. It is found in western and central Europe, excluding Sweden and Norway. A synanthropic species, it constructs webs in and around buildings, adapting to arid environments through water obtained from prey. Occasionally found on vegetation away from buildings, it can be mistaken for the similar T. mystaceum. Adults are recorded throughout the year, peaking between April and July.

Flower Crab Spider - Misumena vatia

Family: Thomisidae
Order: Araneae
Status: -
Habitat: Thrives in grass-scrub boundaries, woodland edges, and open spaces.
Description: The species is widespread in southern England and Wales, as well as western and central Europe, with a preference for southern regions. It thrives in grass-scrub boundaries, woodland edges, and open areas. Notable for its cryptic coloring, it preys from vegetation or flower heads. Sexual dimorphism in color is likely due to niche differentiation. Adults are observed from May to August.

Crested Spider - Xysticus cristatus

Family: Thomisidae
Order: Araneae
Status: -
Habitat: Inhabiting various environments such as grasslands, disturbed areas like quarries, and agricultural fields.
Description: Xysticus cristatus, a spider species, is widespread throughout most of Britain and western and central Europe. It can be found in various habitats but is rare in woodlands and closed canopy areas due to shade intolerance. Common in grasslands, disturbed habitats like quarries, and agricultural fields. It exhibits a

flexible hunting position, preying on flying insects, ants, spiders, and other soft-bodied prey. Immatures have been observed ballooning, mainly between July and September. Adult activity spans from February to December, with a peak in male activity in May and June.

Koch's Ground Crab Spider - Xysticus kochi

Family: Thomisidae
Order: Araneae
Status: -
Habitat: Thrives in warm, dry conditions and is commonly found in open habitats such as ruderal areas, dunes, and chalk pits.
Description: Mainly found in the south of Britain, exhibits a widespread yet patchy distribution across western and central Europe. It thrives in warm, dry conditions, favoring open habitats like ruderal areas, dunes, and chalk pits. Adults are prevalent from May to June, with some females surviving into autumn.

Tibil Ground Beetle - Amara tibialis

Family: Carabidae
Order: Coleoptera
Status: -
Habitat: The elusive adults, capable of flight, inhabit open, sun-exposed lowland areas with short vegetation.
Description: This Eurasian beetle species, absent from Mediterranean regions, is found from France to Northern Italy, across Asia Minor to Siberia, and northern Mongolia. In the UK, it is locally common in southern and central England, becoming more coastal in the west and Ireland. In Scotland, it occurs mainly along the eastern coast. The 4.5-5.9mm beetle, with a parallel-sided appearance and bright brassy metallic coloration, is distinctive. Active year-round, it overwinters in tussocks, with peak activity in May.

Running Ground Beetle - Notiophilus germinyi

Family: Carabidae
Order: Coleoptera
Status: -
Habitat: Open vegetation and bare ground,
Description: Notiophilus germinyi is a species of ground beetle.

Linear Paradromius - Paradromius linearis

Family: Carabidae

Order: Coleoptera
Status: -
Habitat: Diverse habitats, including grassland, parkland, dunes, wasteland, and gardens.
Description: The western Palaearctic species is widespread across Europe to North Africa, including Mediterranean islands. Common in various habitats, it thrives in dry conditions with abundant vegetation, from grassland to gardens. Active year-round, these 4.5-5.5mm beetles are nocturnal predators, with elongate bodies, pale brown color, and distinctive features. They undergo continuous breeding, with mating in spring and autumn. Larvae develop in soil or plant stems, and adults are easily sampled using a sweep net.

Altical Lythri - Altical Lythri

Family: Chrysomelidae
Order: Coleoptera
Status: -
Habitat: Found in diverse wetland habitats, parks, gardens, and coastal areas.
Description: The Altica lythri beetle, widespread in Europe and parts of Asia, is common in the U.K., particularly in England and Wales. It feeds on various plants, including Willowherbs, Rose-bay, and Loosestrife. The distinctive species, identified by its metallic deep blue color, undergoes a life cycle from overwintering to summer adults. Recognizable by its antennae, pronotal furrow, and elytra, it's distinguished through genitalia examination, especially the distinctive features of the median lobe of the aedeagus and spermatheca.

Knotweed Leaf Beetle - Gastrophysa polygoni

Family: Chrysomelidae
Order: Coleoptera
Status: -
Habitat: Common in various habitats, including grassland, moorland, and arable land.
Description: This widespread leaf beetle, Chrysolina polita, is common across the Palaearctic region, found from Portugal to China and North America. Active from April to October, it feeds on various Polygonaceae plants. Adults, 4-5mm in size, are distinctive with a black head and elytra, metallic blue or green reflection, and orange pronotum and legs. Larvae, highly fecund and emerging in batches, cause feeding damage to host plants. They overwinter among tussocks and litter, becoming active again in early spring.

Cabbage Stem Flea Beetle - Psylliodes chrysocephala

Family: Chrysomelidae
Order: Coleoptera

Status: -
Habitat: Thrives where Brassica crops grow.
Description: This species, a major pest of Brassica crops, poses a significant challenge in its resistance to widely used insecticides. Found across Europe and Asia, it infests a variety of cultivated and wild Brassicas. Adults, active year-round, lay eggs on host plants, and larvae cause damage by mining stems. Life cycle completion occurs within 6-8 weeks, with new-generation adults emerging in late May. In the U.K., the species exhibits color variations.

Bittersweet Beetle - Psylliodes dulcamarae

Family: Chrysomelidae
Order: Coleoptera
Status: -
Habitat: This species thrives where host plants like Woody Nightshade are abundant.
Description: This species, widespread in Europe and parts of Asia, is locally common in southern and central England. Active from March to October, it thrives in various habitats where the host plant, bittersweet, is prevalent. Breeding occurs in spring and early summer, with larvae mining host stems. New-generation adults emerge in August and September, causing severe damage to host plants. Easily sampled by sweeping.

Two-spot Ladybug - Adalia bipunctata

Family: Coccinellidae
Order: Coleoptera
Status: -
Habitat: Generally, inhabit low vegetation, e.g., nettles and docks in just about any situation where the prey occur.
Description: Adalia bipunctata, a small Coccinellid, exhibits diverse red and black forms. It distinguishes itself from Mulsantina picta with two white spots on the head and an entirely black ventral surface with black legs. The two-spotted ladybird's variations include the common typica, a melanistic form, and rare purpurea. In North America, unique variations like spotless, four-banded, and cross-hatched forms exist.

Ten-spot Ladybug - Adalia decempunctata

Family: Coccinellidae
Order: Coleoptera
Status: -
Habitat: It is found on bushes and deciduous trees, on grasses, under bark, in moss on trees, in leaf litter, on brushwood, coarse woody debris, and in alluvial soil.

Description: Adalia decempunctata, ranging from 3.5–5 mm, displays high variability with body colors of red, orange, or brown. Individuals may bear 0 to 12 (or rarely more) dark spots on their elytra. The beetles have a glabrous, nearly round body, and legs/antennae are typically brown or orange. The species encompasses eight varietas, including light, dark, and mixed forms, with varying spot patterns.

Seven-spot Ladybug - Coccinella septempunctata

Family: Coccinellidae
Order: Coleoptera
Status: -
Habitat: C. septempunctata has a broad ecological range, generally living wherever there are aphids for it to eat.
Description: Coccinella septempunctata, commonly known as the seven-spot ladybird, is a carnivorous beetle found in Europe, North Africa, Asia, and Australia. Recognizable by its red elytra punctuated with seven black spots, it primarily feeds on aphids. While their toxicity is signaled by distinct colors and spots, they can also secrete a foul-tasting fluid for defense. These ladybirds play a vital role in biological pest control. In the United Kingdom, concerns arise over potential competition with the harlequin ladybird for food. Introduced for aphid control, the seven-spot ladybird has spread in North America, impacting native species.

Multicolored Asian Lady Beetle - Harmonia axyridis

Family: Coccinellidae
Order: Coleoptera
Status: -
Habitat: Wherever its prey occurs,
Description: Harmonia axyridis, commonly known as the harlequin ladybird, exhibits typical coccinellid beetle features with a domed shape, smooth transition between elytra, pronotum, and head, and a size ranging from 5.5–8.5mm. The color forms vary, with the common form being orange or red with black spots, while other forms can be uniformly black or feature complex patterns. The pronotum is white with variable black patterning. Identification is aided by the large size and distinctive coloration, even in varied forms. The species is characterized by reddish-brown legs and a brown underside of the abdomen.

Twenty-two-spot Ladybug - Psyllobora vigintiduopunctata

Family: Coccinellidae
Order: Coleoptera
Status: -
Habitat: Found in generally open or boundary habitats, including arable borders, grassland, parkland, wasteland, road verges, and wooded borders.

Description: This distinctive ladybird, prevalent in Europe, displays a discontinuous distribution, with more records in northern latitudes. Common in the U.K., especially in England, it frequents various open habitats year-round, feeding on mildew and molds. Adults overwinter in grass tussocks, remaining active during mild spells. Both larvae and pupae share the distinct bright yellow coloration of the adults.

Litura Ladybug - Rhyzobius litura

Family: Coccinellidae
Order: Coleoptera
Status: -
Habitat: Favoring grasslands, particularly coastal areas. It frequents low vegetation like nettle-beds and thistles in open spaces.
Description: Measuring 2.5-3.0 mm, this species lacks erect setae on its body, covered with dark and greyish scales forming bands on the pronotum and a spot on the elytra base. Native to the western Palaearctic, it's introduced and widespread in North America. Preferring sweetclover (Melilotus spp.) and other Fabaceae for food.

The Weevil - Psylliodes affinis

Family: Curculionidae
Order: Coleoptera
Status: -
Habitat: This species thrives where host plants like Woody Nightshade are abundant.
Description: This species, ranging from Europe to Asia, has become established in the eastern U.S. and Canada since the 1960s. Common in the UK, it inhabits diverse environments and feeds on various Solonaceae plants. Adults, active year-round, mate and lay eggs in spring, with larvae mining roots. Notable for distinctive coloration, it's easily sampled by sweeping host foliage.

Sitona cylindricollis - Sitona cylindricollis

Family: Curculionidae
Order: Coleoptera
Status: -
Habitat: Found in diverse habitats like open grassland, heaths, verges, parkland, and disturbed sites, including domestic gardens.
Description: Measuring 3.6-5 mm, this species lacks erect setae on its body, covered with dark and greyish scales forming bands on the pronotum and a spot on the elytra base. Native to the western Palaearctic, it's introduced and widespread in North America. Preferring sweetclover (Melilotus spp.) and other Fabaceae for food.

Sitona hispidulus - Sitona hispidulus

Family: Curculionidae
Order: Coleoptera
Status: -
Habitat: Found in diverse habitats like open grassland, heaths, verges, parkland, and disturbed sites, including domestic gardens.
Description: The species is widespread in the Palaearctic region, from Portugal to Japan, with a notable presence in Europe, North America, and North Africa. It thrives year-round, causing foliage damage to legumes, especially on crops like Lucerne. Reproduction occurs in spring, larvae damage roots, and adults peak in abundance from March to November.

Lined Sitona Beetle - Sitona lineatus

Family: Curculionidae
Order: Coleoptera
Status: -
Habitat: This species thrives in any non-waterlogged environment.
Description: Overwintering among grass or clover stubble, originally native to the Western Palaearctic, this species, now Holarctic, has a wide distribution due to introductions. Common in Europe and North America, it feeds on legumes like peas and beans. Year-round activity, overwintering among vegetation. Females lay numerous eggs, and larvae damage plant roots. Adults fly in search of new hosts, mating in spring, ensuring a univoltine life cycle. Abundance increases through the summer.

Dotted Sitona Beetle - Sitona puncticollis

Family: Curculionidae
Order: Coleoptera
Status: -
Habitat: Found in diverse habitats like open grassland, heaths, verges, parkland, and disturbed sites, including domestic gardens.
Description: The Sitona genus, once larger, now comprises around 100 species, including Andrion, Charagmus, and Coelositona as separate genera. Native to the Holarctic, with 15 species in the UK, they feed on Fabaceae. Overwintering in soil, adults become active at 15°C, causing agricultural damage. Pheromone traps monitor pest species, but challenges persist in pest control, leading to global introductions and issues. The wide-ranging S. discoideus became a pest in several countries, controlled by the parasitoid Microctonus aethiopoides in New Zealand.

Anthomyiid Fly - Anthomyia procellaris

Family: Anthomyiidae
Order: Diptera

Status: -
Habitat: Found in wooded areas and hedge rows.
Description: Anthomyia procellaris, a small fly present in Europe, East Palearctic (China, Japan), Near East, and Nearctic (Michigan to North Carolina). Measuring 5–7 mm, it features velvety black on greyish markings, with distinctive thoracic spots. Identifying it is challenging, but differences in wing base markings and hind tibia hairs aid differentiation.

The Fly - Anthomyia sp.

Family: Anthomyiidae
Order: Diptera
Status: -
Habitat: Found in the stems and roots of various plants
Description: Anthomyia is a genus of flies belonging to the family Anthomyiidae. Resembling small houseflies, they often feature distinctive black-and-white patterns. This pattern seems to serve as a mild form of aposematic coloration, although they may not be distasteful unless they have consumed something offensive and loaded their guts with it.

Common Green Bottle Fly - Lucilia sericata

Family: Calliphoridae
Order: Diptera
Status: -
Habitat: Lucilia sericata prefers warm and moist environments, thriving in coastal regions and occasionally in arid areas. It lays eggs in carrion.
Description: Lucilia sericata, the common green bottle fly, is a globally distributed blowfly known for its metallic blue-green or golden coloration. Its larvae are used in maggot therapy and forensic entomology. Thriving in warm, moist climates, it prefers carrion for egg-laying, impacting livestock and causing myiasis.

Hairy-eyed Drone Fly - Pollenia griseotomentosa

Family: Calliphoridae
Order: Diptera
Status: -
Habitat: -
Description: Pollenia griseotomentosa is a species of cluster fly in the family Polleniidae.

Long-legged Fly - Sciapus longulus

Family: Dolichopodidae
Order: Diptera
Status: -
Habitat: Sciapus, a Dolichopodidae genus, encompasses approximately 82 species. Long-legged flies, belonging to the Sciapus genus.
Description: Sciapus, a Dolichopodidae genus, encompasses approximately 82 species. Long-legged flies, belonging to the Sciapus genus.

Wide-winged Long-legged Fly - Sciapus platypterus

Family: Dolichopodidae
Order: Diptera
Status: -
Habitat: Sciapus, a Dolichopodidae genus, encompasses approximately 82 species. Long-legged flies, belonging to the Sciapus genus.
Description: Sciapus, a Dolichopodidae genus, encompasses approximately 82 species. Long-legged flies, belonging to the Sciapus genus.

Siebeck's Dung Fly - Phaonia siebecki

Family: Muscidae
Order: Diptera
Status: -
Habitat: Phaonia siebecki is a species of fly that belongs to the family Muscidae, subfamily Phaoniinae, and tribe Phaoniini.
Description: Phaonia siebecki is a species of fly that belongs to the family Muscidae, subfamily Phaoniinae, and tribe Phaoniini.

Three-spotted Fly - Geomyza tripunctata

Family: Opomyzidae
Order: Diptera
Status: -
Habitat: Grasslands
Description: Active from May to November, this herbicole species is commonly found in grassland and cereal fields. It is widespread throughout Europe, including Norway, Lapland, Siberia, Algeria, and Tunisia. The larvae tunnel in the stems of grasses and cereals.

Rosy-winged Meadow Fly - Meiosimyza rorida

Family: Sphaeroceridae
Order: Diptera
Status: -
Habitat: Deciduous wet forests and hedge rows.
Description: Meiosimyza rorida, found in Europe, Near East, and Nearctic realm, inhabits deciduous wet forests and hedges. Adults, 3.2–4.2 mm long, have yellowish bodies, distinctive bristles, and feed on Heracleum sphondylium nectar and pollen. Females lay eggs in rotting leaves, and adults are active from May to October.

Margined Sphenellid Fly - Sphenella marginata

Family: Sphenellidae
Order: Diptera
Status: -
Habitat: Sphenella marginata is a gall fly species (Tephritidae) found in the Palearctic. Its larvae feed on Senecio vulgaris.
Description: Sphenella marginata is a gall fly species (Tephritidae) found in the Palearctic. Its larvae feed on Senecio vulgaris.

Notched Soldier Fly - Coremacera marginata

Family: Stratiomyidae
Order: Diptera
Status: -
Habitat: These flies can be encountered in grasslands and woodlands.
Description: The adults of Coremacera marginata have a slender, dark greyish body, growing to 7–10 millimeters (0.28–0.39 inches) in length. They feature reddish prominent eyes and brown-yellowish, forward-pointing antennae with a hairy 3rd segment and a whitish arista. The wings are dark grey, mottled with greyish spots.

Abusive Drone Fly - Eristalis abusivus

Family: Syrphidae
Order: Diptera
Status: -
Habitat: The habitat is wetland, coastal fen and salt-marsh, marsh and fen, raised bog and cutover bog.
Description: Describing a fly species, the wings measure 8-9.5 mm in length. Notable features include a shiny scutellum, a face covered with pale dust (with a narrow black stripe in worn specimens), and eyes adorned with pale yellow hairs. In females, the eyes are separated. The apical half of the arista is bare, while the basal half

is very short-haired. Tibia are pale black on the basal quarter or less, with Tibia 2 being very pale. Male genitalia and larva details are available in studies by Hippa et al. (2001) and Hartley (1961), respectively.

Common Drone Fly - Eristalis arbustorum

Family: Syrphidae
Order: Diptera
Status: -
Habitat: Found in a wide range of wetlands and in alluvial softwood forest, temperate coniferous forests, boreal forests, taiga, and montane tundra, as well as farmland, urban parks and gardens.
Description: Eristalis arbustorum, commonly known as the European drone fly, is a syrphid fly found abundantly in the Northern Hemisphere. Described by Linnaeus in 1758, it shares a resemblance with the drone of honeybees, hence the name 'drone fly.' These hoverflies are recognized for their ability to hover almost motionless in flight. Adults, also called flower flies, feed on nectar and pollen from flowers. The larvae are aquatic filter-feeders with long tails. The wings of E. arbustorum measure 7–10 mm, and key features include a plumose arista (antenna), pale dusted face, and hind femora with pale tips. It can be distinguished from E. abusiva by the plumose arista, less projecting mouth-edge, and shorter hairs. The male genitalia and larva details are documented in studies by Hippa et al. (2001) and Hartley (1961), respectively.

Banded Hoverfly - Sphaerophoria scripta

Family: Syrphidae
Order: Diptera
Status: -
Habitat: Inhabits open grassland and urban wasteland.
Description: Sphaerophoria scripta males are distinct with a body longer than wings, showcasing variable black and yellow patterns. Found in open grassland and urban wasteland, they fly from April to November, peaking in July and August. Larvae feed on ground-layer aphids. Common and widespread in Britain, with potential migrant contributions.

Common Hoverfly - Syritta pipiens

Family: Syrphidae
Order: Diptera
Status: -
Habitat: Frequents gardens, rough meadows, and hedgerows.

Description: Syritta pipiens, commonly known as the Thick-legged Hoverfly, is a widespread and easily identifiable species in the UK. Recognizable by its broad hind femora, it is often found in gardens, meadows, and along hedgerows. Larvae develop in compost and rotting organic matter. Population explosions may occur due to mass emergence or migration. Adults are active from April to November, peaking in July and August. Common throughout the UK, with a slightly lesser presence in northern Scotland.

Pied Hoverfly - Xanthogramma pedissequum sensu stricto

Family: Syrphidae
Order: Diptera
Status: -
Habitat: Prefers grassland and open fields near deciduous forests.
Description: Philhelius pedissequus, an uncommon hoverfly species, is found across Europe, Western Siberia, the Near East, and North Africa. Preferring grassland and open fields near deciduous forests, adults measure 10–13 millimeters with a black body featuring two yellow lateral stripes on the thorax and yellow markings on tergites two to five. The flight period spans mid-May through September, with a peak in late June. Adults feed on various flowers, while little is known about their larval stages. Larvae have been found underground in nests of black garden ants and yellow meadow ants, likely feeding on ant-attended root aphids.

Bristle-legged Fly - Billaea irrorata

Family: Tachinidae
Order: Diptera
Status: -
Habitat: parasitizes the long horn beetle Saperda populiea which is associated with poplar
Description: Billaea irrorata is a fly species belonging to the family Tachinidae.

Pagan Bee Fly - Blepharomyia pagana

Family: Tachinidae
Order: Diptera
Status: -
Habitat: Likely to occur where its host species does
Description: Fly species belonging to the family Tachinidae.

Cordilura Fly - Cordilura sp.

Family: Tachinidae
Order: Diptera
Status: -
Habitat: Cordilura is a genus of dung flies belonging to the family Scathophagidae. It encompasses over 90 described species.
Description: Cordilura is a genus of dung flies belonging to the family Scathophagidae. It encompasses over 90 described species.

Divided Fruit Fly - Tephritis divisa

Family: Tephritidae
Order: Diptera
Status: -
Habitat: Frequents grasslands and brown-field sites where Bristly Ox-tongue is present. Larvae develop in the flower heads.
Description: Measuring 4.5mm, this species has a distinct black patch on its wings. Found in grasslands and brown-field sites with Bristly Ox-tongue (Picris ochioides), its larvae develop in the flower heads. Not recorded in Britain until 2004, it is gradually colonizing from the southeast northwards. Uncommon in Nottinghamshire, with a single record at Netherfield Lagoons. Best observed from June to October.

Willow Aphid - Tuberolachnus (Tuberolachnus) salignus

Family: Aphididae
Order: Hemiptera
Status: -
Habitat: Primarily feeds on willow and Salix species, including white willow, common sallow, and Indian willow. Additionally recorded on quince, apple, and poplar.
Description: Tuberolachnus salignus, the giant willow aphid, is recognized as one of the largest aphids, with a body length of up to 5.8mm. Described by Johann Friedrich Gmelin in 1790, it primarily feeds on various willow and Salix tree species, including white willow, common sallow, and Indian willow. This species reproduces parthenogenetically, with only females recorded, leading to genetically identical clones. Host plants also include quince, apple, and poplar.

Meadow Spittlebug - Philaenus spumarius

Family: Aphrophoridae
Order: Hemiptera
Status: -
Habitat: Common and adaptable, thrives on a variety of UK plants.

Description: Highly variable, the froghopper Philaenus spumarius displays diverse color forms, some resembling Aphrophora alni. Identified by the convex forewing outer margin and lacking a median keel on the vertex plate. Widespread across the UK, it produces 'cuckoo-spit' on various plants. Active from June to September, adults measure 5-7 mm.

Erica Bug - Nysius ericae

Family: Lygaeidae
Order: Hemiptera
Status: -
Habitat: Common and widespread, especially in bare ground habitats.
Description: Nabis thymi and Nabis ericae pose identification challenges due to similarities. Distinguishing features include the absence of a defined dark ring at the base of the 2nd antennal segment and wing membrane dark markings. N. ericae's male parameres are less curved than N. thymi's, and females have longer wing vein hairs.

Hutton's Nysius Bug - Nysius huttoni

Family: Lygaeidae
Order: Hemiptera
Status: -
Habitat: Dominates bare ground habitats.
Description: Nysius huttoni, identified by long hairs on the pronotum and forewings, exhibits a broad, squat body, especially in females. Originating from New Zealand, it recently arrived in Britain, proving a potential crop pest. Since 2010, it rapidly spread across England and parts of Wales, thriving in bare ground habitats.

The Bug - Adelphocoris lineolatus

Family: Miridae
Order: Hemiptera
Status: -
Habitat: Commonly found in fields or grasslands, in both dry and damp areas.
Description: This species, often mistaken for the rarer A. quadripunctatus, is distinguishable by paired lines on the scutellum and pronotum spots. The 2nd antennal segment is entirely pale, and fine, inconspicuous dark pubescence is visible on the elytra under a microscope. Widespread in Britain, it frequents herbaceous legumes like restharrow, clovers, and vetches in diverse grassland habitats.

Fallen's Mirid Bug - Arenocoris fallenii

Family: Miridae
Order: Hemiptera
Status: -
Habitat: Mainly local in coastal sand dunes between Norfolk and south Wales; also, in the East Anglian brecks and increasingly inland in recent years, in gravel pits and sandy habitats.
Description: This squash bug, variable in color, is characterized by two rows of pale spines on the pronotum forming a distinctive backward-pointing V-shape. The 3rd antennal segment is parallel-sided. Resembling the rarer A. waltlii, adults overwinter, and nymphs, present from June to July, feed on Common Storksbill (Erodium cicutarium). Likely double-brooded under favourable conditions.

Norwegian Closterotomid Bug - Closterotomus norwegicus

Family: Miridae
Order: Hemiptera
Status: -
Habitat: Found in meadows and hedgerows across Britain, where it feeds on a wide range of plants, especially nettles, composites, and clovers.
Description: This species is part of a group of similar green bugs, with mature males having a red-brown tint and northern British specimens potentially featuring brownish-black markings. Distinguishing characteristics include tibial spines shorter than the tibia's width and the 2nd antennal segment being roughly equal in length to the combined 3rd and 4th segments. The presence of two spots on the pronotum and dark markings at the top of the scutellum can be variable, often being absent.

Toothed Coriomeris Bug - Coriomeris denticulatus

Family: Miridae
Order: Hemiptera
Status: -
Habitat: Associated with dry, open habitats on chalky or sandy soils.
Description: Described as a reddish-brown squash bug, this species is notably bristly, especially on the pronotum, legs, and antennae. The pronotum's lateral margins are adorned with white spines, each terminating in a dark tip. This particular squash bug feeds on black meddick.

Yellowish Deraeocoris Bug - Deraeocoris (Knightocapsus) lutescens

Family: Miridae
Order: Hemiptera
Status: -

Habitat: Vegetated areas.
Description: A small predatory bug commonly found on various plants in southern Britain, particularly favoring deciduous trees like oak. Typically, orange-brown with blackish markings and translucent forewings, it often exhibits two dark bars on the scutellum, which is typically unpunctured. Overwintering as adults, they mate in spring, and the new generation matures by late summer.

Three-horned Kalama Bug - Kalama tricornis

Family: Miridae
Order: Hemiptera
Status: -
Habitat: Herbaceous vegetation.
Description: Dictyonota species and Kalama tricornis share two rows of meshes at the lateral edges of the forewings and uniformly wide antennae (the 3rd segment is as thick or thicker than the 4th). K. tricornis is distinguished by entirely black antennae with long hairs. Unlike Dictyonota species, it lacks long occipital processes next to the eyes. Found widely but locally in the UK, this species is recorded from herbaceous vegetation in various habitats and is likely polyphagous. Its life cycle is similar to Dictynota.

Maritime Lygus Bug - Lygus maritimus

Family: Miridae
Order: Hemiptera
Status: -
Habitat: Distributed locally in coastal and sandy areas across the UK.
Description: Lygus maritimus inhabits regions with mayweeds. A member of the Miridae family, it is challenging to identify due to overlapping characteristics with other species in the genus. Key features include sparse pubescence on the corium middle, widely spaced punctures, green ground color, and a smaller size (5.0-6.0 mm). Found in coastal and sandy areas across the UK, it feeds on various plants, especially mayweeds. Year-round presence distinguishes it from similar species like L. pratensis, L. rugulipennis, and L. wagneri.

Miriform Bug - Myrmus miriformis

Family: Miridae
Order: Hemiptera
Status: -
Habitat: Common in dry and damp grassland habitats in England and Wales.

Description: Myrmus miriformis thrives, feeding on various grasses. Unlike other rhopalids, M. miriformis and Chorosoma schillingi are relatively hairless, elongated bugs resembling mirid grass bugs. M. miriformis males exhibit green and brown color morphs, while females are consistently green. Larger females are brachypterous. Found in dry and damp grasslands across England and Wales, they feed on grass leaves and unripe seeds.

Kalm's Orthops Bug - Orthops (Orthops) kalmii

Family: Miridae
Order: Hemiptera
Status: -
Habitat: Commonly found on umbellifers.
Description: Their presence extends across a variety of habitats. The genus, housing three bugs under 5 mm often on umbellifers, features dark-antennaed species. Identification may require dissection. O. kalmii, distinct from O. campestris and O. basalis, is never green, more elongate, and has a shorter 3rd antennal segment. Common in the UK on various umbellifers.

The Bug - Pinalitus cervinus

Family: Miridae
Order: Hemiptera
Status: -
Habitat: Thrives on trees like lime, hazel, ash, and ivy across the UK.
Description: The genus features small plant bugs associated with trees, identifiable by the pale base of the 2nd antennal segment. Phytocoris cervinus, highly variable in color, is typically pale golden-brown but can be red-brown or greenish. Found on lime, hazel, ash, and ivy, it's common and widespread in the UK with several generations yearly. Adults, around 4 mm long, are present all year.

Smooth Stenodema Bug - Stenodema (Stenodema) laevigata

Family: Miridae
Order: Hemiptera
Status: -
Habitat: Common in the UK, often in damper habitats.
Description: Stenodema laevigata, an elongate grass bug, lacks femoral spurs and has a notch in the hind femora. Similar to other Stenodema species, it is easily confused with female Notostira elongata. Common in the UK, both adults and larvae feed on unripe grains of various grasses, with a preference for damper habitats. Adults overwinter, turn green in spring for mating, and produce a new generation from July onwards.

Red-horned Trigonotylus Bug - Trigonotylus ruficornis

Family: Miridae
Order: Hemiptera
Status: -
Habitat: Adaptable and common in dry grasslands throughout most of Britain.
Description: Trigonotylus species are elongate grass bugs with a smooth, unpunctured pronotum and a furrow between the eyes. In T. ruficornis and the similar T. caelestialum, the 1st antennal segment is largely red with pale longitudinal stripes, more diffuse in T. ruficornis. Common and widespread in dry grasslands across most of Britain.

Apterus Assassin Bug - Himacerus (Himacerus) apterus

Family: Nabidae
Order: Hemiptera
Status: [Not assessed]
Habitat: where its prey occurs (The species feeds on mites, aphids, and other small insects.)
Description: The tree-dwelling bug, H. apterus, is recognized by its black connexivum with orange-red spots and reddish-brown wings. Typically micropterous, it has short wings not extending beyond the 3rd or 4th abdominal segment. Distinguished from H. mirmicoides by longer antennae and hind tibial hairs. Common in England and Wales, less so further north, it feeds on small insects and lays eggs in late summer, with larvae present from May to August. Adults emerge from July onwards.
Length: 8-11 mm.

Sharply-pointed Shieldbug - Aelia acuminata

Family: Pentatomidae
Order: Hemiptera
Status: -
Habitat: These shield bugs mainly inhabit dry meadows and fields of cereals.
Description: Aelia acuminata, ranging from 5–9 millimeters, features a slightly elongated body with a pointed head, justifying its species name. The bugs exhibit a light brown body with darker longitudinal patterns. Nymphs resemble adults but lack wings.

Cabbage Bug - Eurydema (Eurydema) oleracea

Family: Pentatomidae
Order: Hemiptera

Status: -
Habitat: Found on plants in the Brassicae family.
Description: Eurydema oleracea is a species of brightly colored bugs, typically red and black, with variations in markings that may include red, yellow, cream, or orange. These bugs are known for their distinctive appearance, characterized by a metallic green/blue-black ground color overlaid with vibrant markings. E. oleracea overwinters as an adult, emerging in the spring. The larvae, similar to those of the rarer E. dominulus, can be found from May to July and feed on various host plants in the Brassicaceae family, such as garlic mustard and horse-radish. The distribution of E. oleracea is well established in southern and central England, with recent records from south Wales. To differentiate it from similar species like E. ornatum and E. dominulus, careful observation of markings and coloration is necessary. The adult bugs are active throughout the year, and they typically measure 6-7 mm in length.

Tiger Bug - Brachycarenus tigrinus

Family: Reduviidae
Order: Hemiptera
Conservation Status:
Habitat: Found in warm and sparsely-vegetated brownfield situations.
Description: This attractive straw-colored rhopalid displays extensive black markings on the head, especially near the eyes. The pronotum is speckled with black, particularly on the hind angles, and the scutellum has black markings at the base. Notably, the head is shorter and less pointed compared to Rhopalus or Stictopleurus. This species, a recent arrival in Britain, was first recorded in 2003 in Battersea, London, with subsequent sightings in the Thames Gateway, Surrey, and Oxfordshire.
Description: This attractive straw-colored rhopalid displays extensive black markings on the head, especially near the eyes. The pronotum is speckled with black, particularly on the hind angles, and the scutellum has black markings at the base. Notably, the head is shorter and less pointed compared to Rhopalus or Stictopleurus. This species, a recent arrival in Britain, was first recorded in 2003 in Battersea, London, with subsequent sightings in the Thames Gateway, Surrey, and Oxfordshire.

Henbane Bug - Corizus hyoscyami

Family: Rhopalidae
Order: Hemiptera
Status: -
Habitat: Adults are seen all year in dry habitats, meadows, and gardens.
Description: Chorosoma hyoscyami, a striking and unmistakable species, bears a superficial resemblance to red and black ground bugs (Lygaeidae) but can be differentiated by its distinctive markings, hairiness, and numerous veins in the apical wing membrane characteristic of Rhopalidae. Originally confined to the southern British coasts, it is now found inland throughout England and Wales up to Yorkshire. Adults, present all year, overwinter and give rise to a new generation in August-September. The nymphs are yellow/red-brown and also hairy. Adult length is 9 mm.

Red-and-black Rhopalid Bug - Rhopalus (Rhopalus) subrufus

Family: Rhopalidae
Order: Hemiptera
Status: -
Habitat: Inhabits scrubby areas and woodland clearings, often on low vegetation.
Description: The UK's four species of this hairy bug genus, known for reddish forewings, include R. subrufus with distinctive connexivum bands and a bifid scutellum tip. Common in southern Britain, it dwells in scrubby areas, woodland clearings, favoring St John's wort, overwintering as adults, and producing a new generation in August.

Tortoise Bug - Eurygaster testudinaria

Family: Scutelleridae
Order: Hemiptera
Status: -
Habitat: Open vegetation.
Description: Eurygaster testudinaria, the Tortoise Bug, is a large shieldbug found in southern Britain and Ireland. Known for its variable coloration, it can be distinguished from the similar E. maura by subtle features on the head and pronotum. Nymphs feed on grasses and mature into adults from July, with females displaying a distinctive genital gap.

Banksian Panurgus Bee - Panurgus banksianus

Family: Andrenidae
Order: Hymenoptera
Status: -
Habitat: Thrives in short- to medium-height grasslands on sandy or sandy-clay soils. Frequent in coastal grasslands.
Description: A medium-sized, all-black bee with dirty-yellow scopae on the hind legs of females. In dull weather, males are found curled in yellow-flowered Asteraceae, especially hawkweeds, even staying overnight. Distributed in England, up to South Yorkshire, and Wales, including the Channel Islands. Overseas, it spans Europe from Finland to Spain and east to Turkey and the Urals. Thriving in short- to medium-height grasslands over sandy or sandy-clay soils, it's common in coastal grasslands. Univoltine, active from June to August, it nests singly in open ground, without soil mounds. Associated with yellow-flowered Asteraceae, it faces cleptoparasitism from Nomada similis in the Channel Islands. Not of conservation concern in Britain.

Hairy-footed Flower Bee - Anthophora plumipes

Family: Apidae
Order: Hymenoptera
Status: -
Habitat: These bees commonly inhabit gardens, open woodland, and coastal sites.
Description: Anthophora plumipes adults reach 13–15 millimeters in length, displaying various color forms across their geographic range. The species exhibits sexual dimorphism, with males having bright reddish-brown or gray hair, elongated middle legs, and distinctive tufts of black hairs on the tarsi, used as a visual signal during mating. Females are generally all black or dark brown, with reddish-orange scopal hairs on the hind tibia.

Honeybee - Apis mellifera

Family: Apidae
Order: Hymenoptera
Status: -
Habitat: Found anywhere there is a floral resource.
Description: The Western Honeybee (Apis mellifera) adults measure about 12-15 millimeters in length, displaying various color variations across their geographic range. This species also exhibits sexual dimorphism, with males having lighter-colored hair, while females, predominantly workers and queens, typically showcase a darker coloration. Worker bees have specialized pollen baskets on their hind legs, used for collecting pollen. The Western Honeybee is known for its complex social structure, hive construction, and crucial role in pollination.

Fraternal Lasioglossum Bee - Lasioglossum fratellum

Family: Halictidae
Order: Hymenoptera
Status: -
Habitat: Prefers moor, sandy heath, and wooded areas.
Description: Lasioglossum fratellum, a mining bee, is widespread in the British Isles and Eurasia, thriving in moors, sandy heaths, and wooded areas. Not considered scarce, it's univoltine with females flying from April to September. Exhibiting primitively eusocial behavior, its nests contain earth cells clustered in a chamber. It forages on bellflowers, bilberries, daisies, and rosebay willowherb.

Smooth Lasioglossum Bee - Lasioglossum laevigatum

Family: Halictidae
Order: Hymenoptera

Status: -
Habitat: Particularly associated with calcareous grassland; occasionally open woodland on chalk, wooded heathland and fenland.
Description: This mining bee is mainly found in southern England, with sparse records further north and an absence in Scotland, Ireland, and the Channel Islands. It's a local species, occasionally abundant, and has a western Palaearctic distribution, ranging from Britain to the Urals, and central Iberia to Iran. Typically associated with calcareous grassland, it can also be found in open woodland on chalk, wooded heathland, and fenland. The flight period is from mid-April to late September for females and early July to September for males. Nesting habits are not well-documented, and the species is known to visit various flowers, including lesser celandine, broom, plum, wild parsnip, wild carrot, willow, speedwell, guelder-rose, tormentil, and ragwort. The conservation status in Britain is not considered scarce or threatened.

Dark Lasioglossum Bee - Lasioglossum morio

Family: Halictidae
Order: Hymenoptera
Status: -
Habitat: Virtually ubiquitous in lowland England, Wales, and Ireland.
Description: Lasioglossum morio, a mining bee, is widespread in southern Britain, preferring exposed soil for nesting. Not scarce, it's active March-October, possibly bivoltine. Females nest in aggregations, showing primitively eusocial behavior. Associated with various flowers, it's a vital pollinator. Sphecodes niger acts as a cleptoparasite around its nests.

The Bee - Lasioglossum pauxillum

Family: Halictidae
Order: Hymenoptera
Status: [Na]
Habitat: Mainly open sites, including chalk grassland and woodland.
Description: Lasioglossum pauxillum is identified by the diagnostic feature of the broad and rounded apical teeth on the inner spur of the female's hind tibia in Britain, contrasting with narrow and pointed teeth.

The Bee - Lasioglossum sp.

Family: Halictidae
Order: Hymenoptera
Status: -
Habitat: -

Description: The sweat bee genus Lasioglossum is the largest bee genus worldwide, with over 1800 species exhibiting diverse traits such as cleptoparasitism, nocturnality, and oligolecty. They vary in size, color, and nesting habits, nesting mostly in the ground or sometimes in rotten logs.

Villesulent Lasioglossum Bee - Lasioglossum villosulum

Family: Halictidae
Order: Hymenoptera
Status: -
Habitat: Versatile habitats, notably coastal.
Description: The bee species Lasioglossum villosulum is widely distributed in England, Wales, southern Scotland, Ireland, the Isles of Scilly, and the Channel Islands, with a Palaearctic range to Mongolia. Not considered scarce, it inhabits various environments, including coastal cliffs, with a bivoltine flight period from mid-March to October. It practices solitary mining nesting with occasional communal aspects.

Sarcitorius Ichneumon Wasp - Ichneumon sarcitorius

Family: Ichneumonidae
Order: Hymenoptera
Status: -
Habitat: Adults mainly feed on nectar of umbellifers.
Description: The Ichneumon sarcitorius exhibits sexual dimorphism, with males reaching a length of 10–15 mm and females 10–13 mm. Males have a wasp-like appearance with a black and yellow-banded abdomen, while females have a black abdomen with two orange bands and a white tip. Adults are present from July to October, and larvae feed on caterpillars of various moth species. The wasps primarily feed on nectar from umbellifers like Heracleum sphondylium.

Straw-coloured Ichneumon Wasp - Ichneumon stramentor

Family: Ichneumonidae
Order: Hymenoptera
Status: -
Habitat: Meadows, hedges, and woodland edges.
Description: The Ichneumon stramentor is a wasp species belonging to the family Ichneumonidae. The female has a long-tapered abdomen with the first half yellow and the rear half black, featuring a yellow spot at the tip. Legs have black femora, tibiae transitioning from yellow to brown, and tarsi. The thorax is black with a yellow spot, and the head is black. The male has all-dark antennae and lacks a yellow spot on the abdomen tip. The size ranges from 13 to 18 mm.

Gazelle Ancistrocerus Wasp - Ancistrocerus gazella

Family: Vespidae
Order: Hymenoptera
Status: -
Habitat: It is found in a variety of habitats where there is suitable sandy and clay soil, such as riverbanks, coastal areas, parkland, open woodland, and urban areas.
Description: In late spring, overwintered wasps emerge, feeding on nectar and pollen from plants like sea-holly and thistles. After mating, females seek nest sites in cavities of plants or wood, where they create linearly arranged cells with clay partitions. Each cell contains an egg and paralysed caterpillars. The hatching larvae consume caterpillars, undergo diapause, spin cocoons, and adults emerge about two weeks later, moistening the clay plug to exit.

Common Wasp - Vespula vulgaris

Family: Vespidae
Order: Hymenoptera
Status: -
Habitat: Adaptable to a wide range of habitats, including prairie, grassland, forests, shrub lands, gardens, orchards, and buildings.
Description: Vespula vulgaris, commonly known as the common wasp or European wasp, is a eusocial vespid with a nest-building cycle lasting 6–11 months. With remarkable adaptation skills, it thrives in diverse habitats, from humid areas to human structures. Impacting ecosystems, especially in New Zealand and Australia, it can damage fruit crops and pose threats to humans. Taxonomically, it is related to Vespula austriaca and was previously confused with Vespula alascensis in North America. Adults exhibit aposematic colors of black and yellow, and the species is prevalent in various environments, including urban zones.

Box Tree Moth - Cydalima perspectalis

Family: Crambidae
Order: Lepidoptera
Status: -
Habitat: The species, a pest of box plants (Buxus), is likely introduced with imported Buxus plants.
Description: With a wingspan of approximately 40mm, this Asian species was initially recorded in Weybridge, Surrey, marking the first such occurrence in Britain. Attracted to M.V. light on September 5th, 2008, it has since been increasingly observed, particularly in London and the southeast, and is spreading northwards.

Dark Dagger Moth - Catocala fraxini

Family: Erebidae
Order: Lepidoptera
Habitat: Can be found in broadleaved woodland, but wandering adults can be seen in almost any habitat.

Description: Also known as the Blue Underwing, the Clifden Nonpareil is a strikingly large and rare moth. Recognizable by its impressive beauty, it's strongly attracted to sugar at dusk, appearing at light sources or resting on tree trunks and walls during the day. The eggs spend winter on the food plant, hatching into caterpillars in spring, feeding at night until July. Pupation occurs within a silken cocoon spun between leaves or amid leaf litter. This majestic moth flies from late August to early October in one generation, with a wingspan ranging from 75-95mm. The caterpillars primarily feed on Aspen (Populus) and occasionally on other poplars in mainland Europe.

Snout Moth - Hypena proboscidalis

Family: Erebidae
Order: Lepidoptera
Habitat: Habitats include deciduous, mixed and coniferous forests, rivers, hedges, and gardens and parkland.
Description: Common throughout Britain, this moth, with a wingspan of 25-38 mm, is frequently observed around dusk over nettle patches (Urtica dioica), its larval food source. It exhibits two flight periods, from June to August and later in the autumn. The species is often attracted to light traps and can be found in various habitats, including waste ground, gardens, and woodlands.

Rhomboidaria Peribatodes Moth - Peribatodes rhomboidaria

Family: Geometridae
Order: Lepidoptera
Habitat: Larvae thrive on deciduous trees such as hawthorn and ivy.
Description: The moth, with a wingspan of 30-38 mm, is common in Britain and southern Scotland, displaying brownish or greyish forms. Flying in July-August, it may reappear in September in the south. Larvae feed on deciduous trees like hawthorn and ivy, adapting to various habitats.

Brindled Beauty Moth - Xanthorhoe spadicearia

Family: Geometridae
Order: Lepidoptera
Habitat: Urban habitats and alpine elevations.
Description: The species, with a wingspan of 24-27 mm, is fairly common throughout most of Britain. In the south, it has two generations (May-June and July-August), while in the north, there's only one brood (June-July). Resembling the Dark-barred Twin-spot Carpet, it's challenging to distinguish them. The larvae feed on low-growing plants like knotgrass (Polygonum) and bedstraw (Galium).

Red-streaked Caloptilia Moth - Caloptilia rufipennella

Family: Gracillariidae
Order: Lepidoptera
Habitat: The larvae feed on sycamore (Acer pseudoplatanus).
Description: With a wingspan of 11-12 mm, this species, one of several resembling it, is typically identified by its smaller size and a whitish band on the chocolate-brown forelegs. Discovered in Britain in 1970, it initially had a scattered distribution in the northern and eastern regions but has since expanded its range, becoming fairly common in much of England and Scotland. The larvae feed on sycamore (Acer pseudoplatanus), initially creating a small mine and later folding the leaf to feed within. Moths emerge in August, overwinter, and reappear the following spring.

Small Skipper - Thymelicus sylvestris

Family: Hesperiidae
Order: Lepidoptera
Habitat: Found in a variety of habitats, particularly favoring grassy areas. Its habitat includes meadows, fields, and grassy clearings.
Description: The Small Skipper is a butterfly with bright orange-brown wings, distinguished by a thin black line on the forewing in males. Similar to the Essex Skipper but differentiated by antennae tips and scent brand characteristics. These agile flyers are active in high summer, often seen darting through tall grass. They primarily use Yorkshire-fog as a caterpillar food source and have expanded their range northward in recent years. With a small size and a low conservation priority, they are not considered threatened in Europe.

Common Blue Butterfly - Polyommatus icarus

Family: Lycaenidae
Order: Lepidoptera
Habitat: Grasslands, coastal dunes, woodland clearings, meadows, heathlands, and sand dunes.
Description: The Common Blue Butterfly (Polyommatus icarus) belongs to Lycaenidae and is found throughout the Palearctic, introduced to North America. Males have blue wings with black borders, while females are brown with blue dusting. The species faces a 15% decline in the UK since the 1970s, with habitat loss and Lotus corniculatus decline as contributing factors. It was recently elected as the national butterfly of Israel in 2023.

Triple-spotted Moth - Abrostola triplasia

Family: Noctuidae
Order: Lepidoptera
Habitat: Suburban habitats, waste ground, and woodland margins.

Description: The moth described by South in 1907 has blackish-grey forewings with purplish hues featuring a pale reddish-brown basal area and distinct markings. The caterpillar is green with white dots, exhibiting whitish-edged darker marks on segments and a distinctive pattern on its back. The English name 'spectacles' derives from two oval reddish-brown marks resembling glasses on the collar.

Confused Euxoa Moth - Macdunnoughia confusa

Family: Noctuidae
Order: Lepidoptera
Habitat: Vagrant in Britain, attracted to light on the south and east coasts. No specific habitat information provided.
Description: Dewick's Plusia (Macdunnoughia confusa) is a rare vagrant moth in Britain, with only a few dozen recorded sightings. With a wingspan of 32-38 mm, it is primarily attracted to light on the south and east coasts. Optimal observations occur in August, though sightings range from July to October. In continental Europe, it has a double brood, and the larvae typically feed on various plants, especially nettles.

White-speck Mythimna Moth - Mythimna l-album

Family: Noctuidae
Order: Lepidoptera
Habitat: Favors damp coastal habitats, particularly brackish ditches.
Description: With a wingspan of 30-35 mm, this wainscot species is distinctly marked and confined to southern England from Cornwall to Kent. Attracted to sugar and light, it flies in two generations July and September-October. Thriving in damp coastal areas like brackish ditches, its overwintering caterpillars feed on various grasses.

Lesser Yellow Underwing Moth - Noctua comes

Family: Noctuidae
Order: Lepidoptera
Habitat: Widespread across various habitats.
Description: With a wingspan of 37-45 mm, this moth, found abundantly throughout Britain, occupies diverse habitats. Similar to the Large Yellow Underwing, it exhibits considerable variation in forewing color and pattern, including a dark northern form in Scotland. Active from July to September, it's frequently drawn to light.

Large Yellow Underwing Moth - Noctua pronuba

Family: Noctuidae
Order: Lepidoptera

Habitat: The caterpillars feed on a variety of herbaceous plants and grasses.
Description: With a wingspan of 45-55 mm, this species is possibly the most abundant large moth in Britain, with population surges from migratory influxes in the south. It displays diverse color forms, while its yellow hindwings bordered with black remain consistent. Active from July to September, it's highly attracted to light and occupies various habitats, with caterpillars feeding on herbaceous plants and grasses.

Hebrew Character Moth - Orthosia gothica

Family: Noctuidae
Order: Lepidoptera
Habitat: Adaptable to nearly any habitat.
Description: With a wingspan of 30-35 mm, this common species, belonging to the Orthosia genus, is found in diverse habitats. It displays distinct black marks on the forewing, although some northern variants may have paler markings. Flying during March and April, it frequents sallow blossom and is attracted to light. Larvae feed on various plants.

The Moth - Xyleninae sp.

Family: Noctuidae
Order: Lepidoptera
Description: A genus of moth.

Peacock Butterfly - Aglais io

Family: Nymphalidae
Order: Lepidoptera
Habitat: Present in forests, woodlands, and meadows.
Description: Aglais io, the European Peacock or Peacock Butterfly, is a vibrant butterfly found in Europe and temperate Asia, extending to Japan. Formerly classified as the sole member of the genus Inachis, it's not to be confused with the "American peacocks" in the genus Anartia. The European Peacock is resident in much of its range, often wintering in buildings or trees, making early appearances in spring. Its role in research on eyespots as an anti-predator mechanism has been explored. The species is expanding its range and is not considered threatened.

Red Admiral Butterfly - Vanessa atalanta

Family: Nymphalidae
Order: Lepidoptera

Habitat: Caterpillars thrive on stinging nettle and false nettle. The butterfly frequents flowery or grassy places, warm and cool, open or wooded areas.
Description: Vanessa atalanta, the Red Admiral, is a medium-sized butterfly with black wings, red bands, and white spots. Found globally in temperate regions, it migrates in spring and autumn. Its caterpillar prefers stinging nettle, and adults feed on Buddleia and overripe fruit. Territorial and calm, it's known for close observation. Males court females through territorial displays. Climate [redacted] affects migration and flight periods.

Orange-tip Butterfly - Anthocharis cardamines

Family: Pieridae
Order: Lepidoptera
Habitat: Present in forests, woodlands, and meadows.
Description: Anthocharis cardamines, the Orange Tip butterfly, is part of the Pieridae family found in Europe and temperate Asia. Males, with distinctive, orange-tipped forewings, frequent forest edges, while females prefer meadows. The species feeds on various plants but selectively oviposits on crucifer inflorescence. Mating is female-controlled, signalling with their abdomen. [redacted] temperatures have impacted their emergence timing in spring. Both males and females exhibit mottled green and white undersides, providing excellent camouflage on flowerheads.

Small White Butterfly - Pieris rapae

Family: Pieridae
Order: Lepidoptera
Habitat: It inhabits various open areas with diverse plant associations.
Description: Pieris rapae, commonly known as the Small White or Cabbage White Butterfly, is a small to medium-sized butterfly found globally. Recognizable by its white wings with small black dots, it's distinct from P. brassicae by size and black wingtip band. The caterpillar, called "imported cabbageworm," is a pest for crucifer crops. Originally from Europe, it spread to North America, New Zealand, and Australia unintentionally.

Acrobasis Moth - Acrobasis suavella

Family: Pyralidae
Order: Lepidoptera
Habitat: Suburban habitats, waste ground and woodland margins.
Description: Widespread in southern and western Britain, this moth is found in suburban areas, waste grounds, and woodland edges. It flies in June and July, occasionally having a second generation in autumn. The larvae primarily feed on nettle in autumn, and the species overwinters as a pupa. Localized distribution elsewhere.

Leafroller Moth - Clepsis consimilana

Family: Tortricidae
Order: Lepidoptera
Habitat: Gardens, hedgerows where privet grows.
Description: The female of this Tortricidae species is even more subtly marked than the male, with two small darker spots on the hind edge of the reddish-brown forewing aiding in identification. The larvae feed on trees, particularly favoring dead leaves of privet (Ligustrum). Adult moths are active from June to September and are attracted to light sources.

Red-belted Clearwing Moth - Hedya nubiferana

Family: Tortricidae
Order: Lepidoptera
Habitat: The larvae feed on hawthorn (Crataegus species) and blackthorn (Prunus spinosa).
Description: This common species in Britain has larvae that mimic bird droppings when at rest. The larvae feed on various trees, including hawthorn and blackthorn. The adult, flying from dusk into the night between June and August, is easily attracted to light. Larvae are found in spun leaves and flowers of Crataegus and Prunus trees, with distinct features like a translucent grey-green body, black spiracles, and a pitchy black anal comb on the anal segment.

Atropunctana Metendothenia Moth - Metendothenia atropunctana

Family: Tortricidae
Order: Lepidoptera
Habitat: Bog-myrtle (Myrica gale), willows (Salix spp.)
Description: Metendothenia atropunctana, a moth in the Tortricidae family, was first described by Johan Wilhelm Zetterstedt in 1839. Found in the Palearctic and Northern America, it has a wingspan of 14–17 mm. Resembling a bird dropping for camouflage, it features black-brown patterned forewings with a white spot and brown hindwings. Larvae develop on Myrica gale, Betula, and Salix spp., forming pods by spinning leaves together. The second-generation pupa overwinters in leaf-litter cocoons. The moth is active in May-June and mid-July to late August in the second generation.

Manniana Phalonidia Moth - Phalonidia manniana

Family: Tortricidae
Order: Lepidoptera
Habitat: It prefers riverbanks, ditches, and stream margins. Larvae inhabit water mint and gipsywort stems.

Description: With a wingspan of around 10-13mm, this moth is locally common in southern England, extending northwards to Lancashire, Yorkshire, and North Wales. It resides along riverbanks, ditches, and stream margins. Larvae, found in water mint and gipsywort stems, overwinter there. Adults fly in the evening and night, mainly in June and July.

Red Slender Burnet Moth - Tachystola acroxantha

Family: Zygaenidae
Order: Lepidoptera
Habitat: Adaptable to various environments, associated with withered leaves and leaf-litter.
Description: With a wingspan of 13-15mm, this adventive species, likely introduced with Australian plants, was first observed in Devon in 1908. Rapidly expanding northward, it is now quite common in areas like Lancashire. Larvae feed on withered leaves and leaf-litter, and the colorful adults are attracted to light from May to September.

Meadow Grasshopper - Chorthippus brunneus

Family: Acrididae
Order: Orthoptera
Habitat: Grassy areas.
Description: The Common Field Grasshopper is abundant and found in open, sunny, grassy areas, including gardens. Adults are active from June to late autumn, feeding on plants. This gregarious species displays courtship behavior, with males creating a brief, single chirrup by rubbing legs against wings. After mating, eggs are laid in the soil, ready to hatch the following summer.

Long-winged Conehead - Conocephalus fuscus

Family: Tettigoniidae
Order: Orthoptera
Habitat: Commonly found in rough grassland, dry heaths, woodland rides, and various damp and coastal habitats.
Description: Primarily herbivorous, it feeds on grasses and occasionally small invertebrates. Nymphs emerge from mid-May, maturing into adults by the end of July. Their soft, hissing buzz, almost inaudible to some humans, can be detected with a bat detector. Females lay eggs in late summer within grass stems, where they overwinter, ready to hatch in the following spring.

Appendix 2: Invertebrate Status codes: Conservation status break down:

New System (Post-2001 IUCN Criteria):		
Conservation Status	Qualifying Criteria	Legal Implications
EX - Extinct	No individuals of the species remain in the wild.	Recognition that the species no longer exists may result in a lack of legal
RE - Regionally Extinct	No individuals of the species remain within a specific region.	Regional extinction may trigger regional or international legal conservation efforts.
CR - Critically Endangered	- Extremely high risk of extinction. - Population size reduction over a specific	Legal measures and conservation efforts are likely, given the critical status.
CR(PE) - Critically Endangered (Possibly Extinct)	Critically Endangered status with a possibility of being extinct.	Conservation efforts may continue, considering the possibility of extinction.
EN - Endangered	- Very high risk of extinction. - Population decline and restricted distribution.	Legal protections and conservation efforts may be initiated.
VU - Vulnerable	- High risk of extinction. - Population decline or restricted distribution.	Legal protections and conservation strategies may be implemented.
NT - Near Threatened	- Not yet meeting the criteria for higher threat categories but may be close to	Monitoring and preventive measures may be necessary.
DD - Data Deficient	- Insufficient data to assess conservation status.	Further assessment and data gathering needed before legal actions.
LC - Least Concern	- Widespread and not currently at risk of extinction.	May not require specific legal protections.
NA - Not Assessed	The species has not been formally assessed for conservation status.	Conservation status unknown; legal protections may not be applied.
NE - Not Evaluated	There is not enough information to make a conservation assessment.	Conservation status unknown; legal protections may not be applied.

Old System (Pre-1994 Criteria):		
Conservation Status	Qualifying Criteria	Legal Implications
Extinct	The species is no longer in existence.	Legal recognition that the species is extinct; no further legal protections are typically needed.
RDB 1 - Endangered	Listed as Endangered in the Red Data Book. Faces a high risk of extinction.	Legal protection measures and conservation actions may apply.
RDB 2 - Vulnerable	Listed as Vulnerable in the Red Data Book. Faces a significant risk of extinction.	Legal protections and conservation efforts may be implemented.
RDB 3 - Rare	Listed as Rare in the Red Data Book. Faces a risk of decline or extinction.	Conservation actions may involve legal measures.
RDB K - Insufficiently Known	Insufficient knowledge to assess conservation status.	Conservation actions may include further research.
RDB I - Indeterminate	Conservation status is indeterminate or uncertain.	Conservation actions may involve further assessments.
Na - Notable A	Species of notable conservation importance.	Conservation actions may vary based on the level of importance.
Nb - Notable B	Species of notable conservation importance.	Conservation actions may vary based on the level of importance.
Notable	Species that are notable or nationally scarce.	Conservation actions may be needed; legal measures may vary.
NR (Nationally Rare - marine species)	Marine species that are nationally rare.	Legal recognition of marine species rarity; conservation actions may apply.
NS (Nationally Scarce - marine species)	Marine species that are nationally scarce.	Legal recognition of marine species scarcity; conservation actions may be considered.
Unknown	Conservation status is unknown.	Further assessments may be required for legal determinations.
None	The species is not rare or scarce.	May not require specific legal protections.
Not Reviewed	The taxon was not assessed for rarity in the review.	Conservation status unknown; legal protections may not be applied.
New to Britain	Recently added to the British list and not yet reviewed but considered rare.	Legal recognition of recent addition and potential rarity; conservation actions may be considered.
Not Native	The taxon is thought not to be native.	Conservation measures may vary based on non-native status.

1. In prior assessments of rare and threatened invertebrates, the Red Data Book criteria from the British Insect Red Data Book (Shirt 1987) were applied, supplemented with the inclusion of the RDBK (Insufficiently Known) category introduced in 1983. From 1991, the status category Nationally Notable (now called Nationally Scarce) was incorporated. The original International Union for the Conservation of Nature (IUCN) criteria used in these assessments lacked precision, employing terms such as Endangered, Vulnerable, and Rare without specific quantitative parameters. The subjective nature of applying these categories consistently across taxonomic groups or making comparisons between different organisms prompted international recognition of the deficiencies in the mid-1980s. Proposals were made to replace the system with a more objective and consistent approach.

2. In 1989, the IUCN's Species Survival Commission Steering Committee called for the development of new criteria to objectively classify species based on their risk of extinction. The initial outline of this new system was published in 1991, underwent revisions, and was officially adopted as the global standard by the IUCN Council in December 1994. These guidelines were also recommended for national use. In 1995, the Joint Nature Conservation Committee (JNCC) endorsed the revised IUCN criteria as the new national standard for Great Britain, subsequently used in British Red Data Books. The criteria utilized in this report are as follows:

3. EXTINCT (EX): A species is considered extinct when there is no reasonable doubt that the last individual has died.

4. EXTINCT IN THE WILD: A species is deemed extinct in the wild when it is known to survive only in cultivation, captivity, or as a naturalized population well outside its past range.

5. CRITICALLY ENDANGERED: A species falls under this category when facing an extremely high risk of extinction in the wild in the immediate future, meeting specific criteria related to population reduction, extent of occurrence, and population size.

6. ENDANGERED: A species is classified as endangered when facing a very high risk of extinction in the wild in the near future, based on criteria similar to those for critically endangered species.

7. VULNERABLE: Species in this category are not critically endangered or endangered but face a high risk of extinction in the wild in the medium-term future, meeting specific criteria related to population reduction, extent of occurrence, and population size.

8. LOWER RISK: This category includes species that do not meet the criteria for critically endangered, endangered, or vulnerable. Lower risk species are further subdivided into conservation-dependent species, near-threatened species, and least concern species.

9. DATA DEFICIENT: A species is labelled data deficient when there is insufficient information to assess its risk of extinction based on distribution and/or population status.

10. LOWER RISK (NATIONALLY SCARCE): This category includes species estimated to occur in fewer than 100 hectads of the Ordnance Survey national grid in Great Britain. It is not a threat category but an estimate of the species' distribution extent, further subdivided based on occurrence.

11. NATIONALLY LOCAL (L): Species in this category, while fairly common, are less widespread than truly common species, not qualifying as nationally notable but recorded from over 100 but less than 300 ten-kilometre squares of the UK National Grid.

12. ASSOCIATED DEFINITIONS:

    12.1. Extent of occurrence: The area within the shortest continuous imaginary boundary encompassing all known, inferred, or projected sites of present occurrence of a species.

    12.2. Area of occupancy: The area within the extent of occurrence occupied by a species, excluding cases of vagrancy, and reflecting the essential area for the survival of existing populations.

    12.3. Note: The criteria include values in km2, and the area of occupancy should be measured on appropriately small grid squares to avoid classification errors.

APPENDIX 6

Site Photographs (June 2021)

Site Photographs (June 2021)

Photo 1

Photo 2

Photo 3

Photo 4

APPENDIX 7

Site Photographs (June 2023)

Site Photographs (June 2023)

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

Photo 10

Photo 11

Photo 12

APPENDIX 8

Wimbledon Common SAC Citation and Standard Data Form

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name: Wimbledon Common

Unitary Authority/County: Greater London

SAC status: Designated on 1 April 2005

Grid reference: TQ227719

SAC EU code: UK0030301

Area (ha): 348.31

Component SSSI: Wimbledon Common SSSI

Site description:
Wimbledon Common supports an extensive area of open, wet heath on acidic soil and also contains a variety of other acidic heath and grassland communities. The high plateau in the east and north of the site has a capping of glacial gravels overlying Claygate Beds and London Clay, which are exposed on the western slope of the Common. The acidic soils and poor drainage give rise to a mosaic of wet heath and unimproved acidic grassland. Semi-natural broadleaved woodland covers the deeper, clay soils of the western slope.

A significant cover of heather *Calluna vulgaris* distinguishes areas of dry and wet heath. The wet heath supports typical species such as the heath rush *Juncus squarrosus*. The brown sedge *Carex disticha* is present, as is mat-grass *Nardus stricta* on drier parts. Localised areas of dry heath support bell heather *Erica cinerea* and dwarf gorse *Ulex minor*.

The semi-natural woods of the clay soils comprise a dense canopy of maturing pedunculate oak *Quercus robur* and silver birch *Betula pendula*, with beech *Fagus sylvatica*, hornbeam *Carpinus betulus* and aspen *Populus tremula* in parts. Holly *Ilex aquifolium* is the dominant understorey species. Hazel *Corylus avellana* and alder buckthorn *Frangula alnus*, also occur. Where sufficient light penetrates there is a herb layer of bracken *Pteridium aquilinum* and bramble *Rubus fruticosus* agg. Wimbledon Common has a large number of old trees and much fallen decaying timber. The site supports a number of other scarce invertebrate species associated with decaying timber, including stag beetle *Lucanus cervus*.

Qualifying habitats: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- European dry heaths
- Northern Atlantic wet heaths with *Erica tetralix*. (Wet heathland with cross-leaved heath)

Qualifying species: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Stag beetle *Lucanus cervus*

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK0030301
Date of registration: 14 June 2005

Signed: Trevor Salmon

On behalf of the Secretary of State for Environment, Food and Rural Affairs

STANDARD DATA FORM for sites within the ‘UK national site network of European sites’

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **UK0030301**

SITENAME **Wimbledon Common**

TABLE OF CONTENTS

- 1. SITE IDENTIFICATION
- 2. SITE LOCATION
- 3. ECOLOGICAL INFORMATION
- 4. SITE DESCRIPTION
- 5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES
- 6. SITE MANAGEMENT

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
B	UK0030301

1.3 Site name

Wimbledon Common

1.4 First Compilation date	1.5 Update date
2001-01	2015-12

1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY

Email:

Date site proposed as SCI:	2001-01
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-04
National legal reference of SAC designation:	Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010 (http://www.legislation.gov.uk/uksi/2010/490/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-0.234444444	51.43222222

2.2 Area [ha]:

351.38

2.3 Marine area [%]

0.0

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKI2	Outer London

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
4010			70.28	0	M	C	C	C	C
4030			105.41	0	M	C	C	B	C

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site					Site assessment	
		Scientific									

G	Code	Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
I	1083	Lucanus cervus			p				C	DD	C	B	C	B

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N07	0.5
N08	5.0
N09	45.0
N06	1.0
N16	45.0
N14	3.5
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: sand,acidic,clay 2 Terrestrial: Geomorphology and landscape: lowland

4.2 Quality and importance

Northern Atlantic wet heaths with Erica tetralix for which the area is considered to support a significant presence. European dry heaths for which the area is considered to support a significant presence. Lucanus cervus for which this is one of only four known outstanding localities in the United Kingdom.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	B02		I
H	H04		B
H	I01		B
H	J03		B

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	A02		I

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/6490068894089216

http://publications.naturalengland.org.uk/category/3212324
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [X] No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the official European Union guidelines for the Standard Data Form (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code

BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced [redacted] in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	[redacted] in abiotic conditions	65
M02	[redacted] in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

APPENDIX 9

Wimbledon Common SSSI Citation

COUNTY: GREATER LONDON SITE NAME: WIMBLEDON COMMON

BOROUGH: WANDSWORTH AND MERTON

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981.

Local Planning Authority: Wandsworth Borough Council; Merton Borough Council

National Grid Reference: TQ 227720 Area: 346.5 (ha.) 856.2 (ac.)

Ordnance Survey Sheet 1:50,000: 176 1:10,000: TQ 27 SW

Date Notified (Under 1949 Act): 1953 Date of Last Revision: 1975

Date Notified (Under 1981 Act): 1986 Date of Last Revision: –

Other Information:
There are several boundary amendments, including extensions.

Reasons for Notification:
Wimbledon Common supports the most extensive area of open, wet heath on acidic soil in Greater London. The site also contains a variety of other acidic heath and grassland communities reflecting the variations in geology, drainage and management. Associated with these habitats are a number of plants uncommon in the London area.

The high plateau in the east and north of the site has a capping of glacial gravels overlying Claygate Beds and London Clay which are exposed on the western slope of the Common. The acidic soils, and poor drainage of the plateau give rise to a mosaic of wet heath and unimproved acidic grassland. Semi-natural broadleaved woodland covers the deeper, clay soils of the western slope.

The acidic grassland is mostly co-dominated by common bent *Agrostis capillaris* and sheep's-fescue *Festuca ovina*, with soft rush *Juncus effusus* well-represented where drainage is impeded. Also present are two locally uncommon grasses, wavy-hair grass *Deschampsia flexuosa* and in damper depressions, purple moor-grass *Molinia caerulea*. Typical herb species of unimproved grassland occur including heath bedstraw *Galium saxatile*, tormentil *Potentilla erecta*, harebell *Campanula rotundifolia*, and eyebright *Euphrasia officinalis*. Purple moor-grass also characterises the ground flora beneath encroaching pedunculate oak -- birch woodland on the gravels of the plateau.

A significant cover of heather *Calluna vulgaris* distinguishes areas of both dry and wet heath. The wet heath is especially important for its large extent and supports typical species such as the heath rush *Juncus squarrosus*. The brown sedge *Carex disticha* is present, as is mat-grass *Nardus stricta* on drier parts. Both of these species are restricted in their occurrence in Greater London. Localised areas of dry heath supporting bell-heather *Erica cinerea* and dwarf gorse *Ulex minor* demonstrate the variability of the heathland habitat, and are of additional note for an interesting lichen flora.

The semi-natural woods of the clay soils comprise a dense canopy of maturing pedunculate oak *Quercus robur* and silver birch *Betula pendula*, with beech *Fagus sylvatica*, hornbeam *Carpinus betulus* and aspen *Populus tremula* in parts. Holly *Ilex aquifolium* is the dominant understorey species. Hazel *Corylus avellana* and alder buckthorn *Frangula alnus*, a species with a restricted distribution in London, also occur. Where sufficient light penetrates there is a herb layer of bracken *Pteridium aquilinum* and bramble *Rubus fruticosus*.

Several streams rise at the boundary of the gravels and clays and one feeds a small valley mire known locally as Farm Bog. A rich assemblage of plants uncommon in Greater London occur here, such as bogbean *Menyanthes trifoliata*, bulbous rush *Juncus bulbosus*, water horsetail *Equisetum fluviatile* and several species of bog moss *Sphagnum*, including *S. palustre* and *S. fimbriatum*.

There are several ponds on the Common. The disused Bluegate gravel workings with its variable water level supports an abundance of floating club-rush *Eleogiton fluitans* in the shallow water. This is a locally uncommon species. Bog mosses, mainly *Sphagnum subsecundum* are also present, occurring amongst tussocks of rush *Juncus* species.

The woodland and scrub support a locally important community of breeding birds, including green and great spotted woodpeckers, lesser whitethroat, nuthatch, and in most years, kestrel and lesser spotted woodpecker.

APPENDIX 10

Biodiversity Net Gain Assessment (Summary Sheet)
[Excel spreadsheet provided separately]

Mitcham Gasworks

Headline Results

Return to results menu

On-site baseline	*Habitat units*	6.27
	Hedgerow units	0.00
	River units	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	6.79
	Hedgerow units	0.35
	River units	0.00
On-site net % [redacted] (Including habitat retention, creation & enhancement)	*Habitat units*	8.32%
	Hedgerow units	0.00%
	River units	0.00%
Off-site baseline	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit [redacted] (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	0.52
	Hedgerow units	0.35
	River units	0.00
Total on-site net % [redacted] plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	8.32%
	Hedgerow units	100.00%
	River units	0.00%
Trading rules Satisfied?	No - Check Trading Summary ▲	

APPENDIX 11

Biodiversity Net Gain Assessment (Condition Assessment Information)

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Worcestershire
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www.ecologysolutions.co.uk

9740: LAND AT MITCHAM GASWORKS

BIODIVERSITY NET GAIN (CONDITION ASSESSMENT INFORMATION)

1. Table 1 below presents in full the pre-development calculations of habitat units which have been undertaken for the application site (taking into account the basline position at the time of the planning application in December 2022, as outlined in the Ecological Assessment). The information provides clarification in relation to the assessment of the condition of each of the habitats present, taking into account the guidance associated with the metric, together with explanatory text.

2. Table 2 subsequently considers the post-development calculations, again with clarification provided in relation to the assessment of the condition of all new proposed habitats, with explanatory text provided to assist.

Baseline habitat	Baseline Biodiversity Units	Condition Criteria / Pass or Fail / Indicator Score		Condition	Ecological Features and Condition Notes
Developed Land	0	N/A		N/A	This area constitutes a small number of existing buildings and areas of tarmac and concrete which are devoid of any vegetation.
Modified Grassland	2.55	Grassland Low Distinctiveness		Fairly Poor Criterion 1 is only passed for a portion of the grassland. Where criterion 1 is passed, 5 / 7 condition criteria passed = Moderate Where criterion 1 is not passed, 4 / 7 condition criteria passed = poor As such Fairly Poor condition has been utilised	There are areas of species-poor grassland present in the southern and eastern parts of the application site. These are distinct from Open Mosaic Habitat (see below) as they lack the bare ground element. This includes areas of grassland which support an average of 5 or less species per m2, in addition to slightly more diverse swards with an average of 6 to 8 species per m2. As such Criterion 1 is only partially satisfied. On the ground it is difficult to accurately sperate out these two swards. As a result, taking into account the condition criteria, a condition of Fairly Poor has been applied.
		C1 – 6-8 species per m^2	Part Pass / Part Fail		
		C2 – Sward height is varied	Fail		
		C3 – Scrub accounts for less than 20% of area	Pass		
		C4 – Physical damage evident in less than 5% of total area	Pass		
		C5 – Cover of bare ground between 1% and 5% of total area	Fail		
		C6 – Cover of Bracken less than 20%	Pass		
		C7 – Absence of invasive species and undesirable species make up less than 5% of ground cover	Pass		
Mixed Scrub	0.24	Scrub		Poor (2 / 5 condition criteria passed = ‘Poor’)	Small areas of mixed scrub are present within the application site, including in the north-east and to the south of the former gas holder structure. These areas support a number of species including native but also include a considerable proportion (significantly more than 5%) of non-native species indicative of suboptimal condition (specifically, Buddleia and Cherry
		C1 – Minimum 3 species, no one species >75% of cover.	Pass		
		C2 – Good age range	Fail		

Baseline habitat	Baseline Biodiversity Units	Condition Criteria / Pass or Fail / Indicator Score		Condition	Ecological Features and Condition Notes
		C3 – Absence of invasive-non-native species, suboptimal species <5%.	Fail		Laurel). Areas of dense scrub within the site are typically of a single age range resulting from recolonization, with no seedlings recorded.
		C4 – Well developed shrub edge.	Pass		
		C5 – Clearances, glades or rides providing sheltered edges.	Fail		
Bramble Scrub	0.04	N/A		N/A	Small sections of dense Bramble scrub in the south-east of the application site along the boundary.
Vacant/derelict land/ bare ground	1.40	C1 – Varied Structure	Fail	Poor (1/3 condition criteria passed = 'Poor)	The application site has extensive areas of bare ground which was (as of December 2022) subject to recent disturbance associated with gas holder works (late 2021) and illegal use of the site and dumping by travelers in 2022. These areas supported heavily disturbed and compacted ground with no recolonising vegetation due to this disturbance.
		C2 – diverse range of flowering plant species	Fail		
		C3 – Invasive non native cover less than 5%	Pass		
Open Mosaic Habitats on Previously Developed Land	2.04	C1 – Varied Structure	Pass	Poor (1/4 condition criteria passed = 'Poor)	By December 2022 the application site had developed areas of Open Mosaic Habitat. These supported a varied vegetation structure, although the flowering plant species colonizing these areas are likely to have been relatively limited in diversity. With regards to spatial variation, the mosaic supported bare substrate in addition to annuals, ruderals and flower rich grassland. However, no pools are anticipated to have been present. As such it is assessed that Criterion 4a would have been failed. Detailed invertebrate survey work undertaken in Summer 2023 has subsequently identified that the Open Mosaic Habitat, as of 2023, is in unfavorable condition with regard to the invertebrate assemblages that it supports. Mindful that the habitat will have developed further since December 2022, it is therefore considered that applying Poor condition would be appropriate in respect of the BNG assessment.
		C2 – diverse range of flowering plant species	Fail		
		C3 – Invasive non native cover less than 5%	Fail		
		C4a – Spatial Variation	Fail		

Table 1: Summary of Baseline Habitats

Proposed Habitat	Biodiversity Units Delivered	Condition Criteria / Pass or Fail / Indicator Score		Condition	Target Condition Notes
Developed Land; Sealed Surface	0.00	N/A		N/A	This area includes all areas of proposed buildings, hardstanding and sealed surfaces (including roads, pavements and walkways).
Intensive Green Roof	0.47	C1 – Varied Structure	Pass	'Moderate' (3 / 4 condition criteria passed = Moderate)	Areas of intensive green roof are proposed on new buildings in the form of landscaped roof gardens. These areas will support a variety of shrub, perennial and bulb species with a varied structure, including wildlife beneficial species.
		C2 – diverse range of flowering plant species	Pass		
		C3 – Invasive non native cover less than 5%	Pass		
		AC 4c1 – Minimum 50% native and non-native wildflowers – 70% roof area is soil and vegetation.	Fail		
Biodiverse Green Roof	2.87	C1 – Varied Structure	Pass	Good (4 / 4 condition criteria passed = Moderate)	Biodiverse green roofs will be provided on all new buildings, designed in light of the principles of ecomimicry, to reflect current opportunities for invertebrates that can be maintained in the long term. The roofs will have varied substrate depths and include bare ground, native species-rich flowering mixes, and other features specifically for invertebrates including wood, rubble and habitat piles. These features will be subject to long term management to ensure a diverse range of micro habitats is maintained.
		C2 – diverse range of flowering plant species	Pass		
		C3 – Invasive non native cover less than 5%	Pass		
		AC 4c2 – varied depth of 80 – 150 mm at least 50% is at 150mm	Pass		
Modified Grassland	0.37	Grassland Low Distinctiveness		Good (6 / 7 condition criteria passed = Good)	Species rich grassland will be provided as part of the development proposals. This will comprise a flowering lawn mixture (with a species richness which is of at least 6 species per m2) but has been considered to represent low distinctiveness grassland on a precautionary basis. Whilst the sward is anticipated to have
		C1 – 6-8 species per m2	Pass		
		C2 – Sward height is varied	Fail		

Proposed Habitat	Biodiversity Units Delivered	Condition Criteria / Pass or Fail / Indicator Score		Condition	Target Condition Notes
		C3 – Scrub accounts for less than 20% of area	Pass		relatively limited variation in height, it will meet the other criteria and it is therefore expected to achieve Good condition subject to appropriate management.
		C4 – Physical damage evident in less than 5% of total area	Pass		
		C5 – Cover of bare ground between 1% and 5% of total area	Pass		
		C6 – Cover of Bracken less than 20%	Pass		
		C7 – Absence of invasive species and undesirable species make up less than 5% of ground cover	Pass		
Rain Garden	0.18	C1 – Varied Structure	Pass	Moderate (2 / 3 condition criteria passed = Moderate)	Rain gardens supporting a variety of native and non-native perennial and shrub species will be provided. Whilst these will support a relatively diverse range of species, the presence of non-native species in the planting mixture means that in light of the associated guidance they have been assigned Moderate condition.
		C2 – diverse range of flowering plant species	Fail		
		C3 – Invasive non native cover less than 5%	Pass		
Introduced Shrub	0.56	N/A		N/A	Areas of new ornamental planting will be provided throughout the new development including non-native and some native species.
Urban Tree	2.24	C1 – Native species	Fail	Moderate (3 / 6 condition criteria passed = Moderate0	New tree planting comprising a diverse range of species will be provided throughout the new development. Whilst the tree species proposed are primarily non-native, many will oversail other habitats such as grassland and they will be subject to long-term management to ensure that they mature successfully and moreover that adverse impacts from vandalism are mitigated.
		C2 – Continuous canopy (Where relevant)	Pass		
		C3 – Mature or veteran	Fail		

Proposed Habitat	Biodiversity Units Delivered	Condition Criteria / Pass or Fail / Indicator Score		Condition	Target Condition Notes
		C4 – Adverse impact on tree health / growth	Pass		
		C5 – Micro habitats	Fail		
		C6 – oversailing vegetation (20%)	Pass		

Table 2. Summary of post-development habitats

APPENDIX 12

Suitable Examples of Bird Boxes

Bird Boxes

Vivara Pro WoodStone House Sparrow Nest Box

The Vivara Pro WoodStone House Sparrow Nest Box is an attractive, hardwearing bird box that will provide nesting space for House Sparrows and other communal nesting species. This box is made from WoodStone, a mixture of wood fibres from fully certified FSC wood sources and concrete, and it is designed to last for years. It is breathable and maintains a consistent temperature inside, providing excellent insulation for nesting birds. This bird box has been designed to either be built into the fabric of a new building or attached to the external wall.

Height: 220mm
Width: 290mm
Depth: 165mm

Weight: 7kg

Hole size: Oval

Vivara Pro WoodStone Build-in Swift Nest Box

The Vivara Pro WoodStone Swift Nest Box is an attractive, hardwearing bird box that will provide nesting space for Swifts, and should ideally be placed on the north or east elevations, at least 5m up and beneath an eave.
This box is made from WoodStone, a mixture of wood fibres from fully certified FSC wood sources and concrete, and it is designed to last for years. It is breathable and maintains a consistent temperature inside, providing excellent insulation for nesting birds. This bird box has been designed to be built into the fabric of a new building.

Height: 185mm
Width: 335mm
Depth: 160mm

Weight: 7kg

Hole size: Oval 34mm

Images and text adapted from manufacturer's website: *vivarapro.co.uk*

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Bird Boxes

Schwegler bird boxes have the highest rates of occupation of all types of box. They are designed to mimic natural nest sites and provide a stable environment with the right thermal properties for chick rearing and winter roosting. Boxes are made from 'Woodcrete'. This 75% wood sawdust, clay and concrete mixture is breathable and very durable making these bird boxes extremely long lasting.

House Martin Terrace

This exceptionally stylish new design will complement any house and prove equally popular with the martins. Straightforward to erect (masonry screws are provided) and easy to clean (each nest slides out after release of a safety screw) the woodcrete construction of both nests and housing ensures it will look just as attractive after 20 years and 80 or more broods.

Dimensions: 180H x 430W x 150D mm.
Nests slide out for cleaning.
Made in remarkable WoodcretePLUS™.

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MEMO

TO	[redacted] **Greater London Authority (GLA)**
DATE	**03 January 2024**
SUBJECT	**Mitcham Gasworks – Energy and Sustainability Amendments**

This note summarises the key energy and sustainability amendments in relation to LPA application ref 22/P3620 (GLA/2023/0107), at Mitcham Gasworks, Western Road, London Borough of Merton (LBM).

The application was submitted to LBM December 2022, with GLA Stage 1 Report received 20 March 2023. The GLA Stage 1 Report and associated Energy Memo requested that the Energy Strategy be refined and for the submission of additional information.

Following the Stage 1 Report, through correspondence with the GLA Spring/Summer 2023 via the GLA Energy Memo spreadsheet, amendments were made to the Energy Statement June 2023, which contained the following updates:

- Be Green – demonstration that renewable energy has been maximised, including roof layouts showing the extent of PV provision and details of the proposed air source heat pumps, contribution to an overall achievement of 55.1% reduction over Part L 2021 baseline
- Confirmation of compliance with the Be Seen requirements of London Plan Policy SI2;
- Confirmation on energy infrastructure and potential for district heating network connection;
- Further details on managing heat risk to demonstrate the cooling hierarchy has been followed; and
- Updated carbon offset figure (due to clarification on baseline).

The completed template spreadsheets for Be Seen, Circular Economy Statement and Whole Life Cycle were also submitted to the GLA, as requested. Responses were received from the GLA 27/06/2023. The 'outstanding' items are addressed in table below:

Comment no.	GLA comment 27/06/2023	Updated position 08/12/2023
2	Updated GLA Carbon Emission reporting spreadsheet requested	Updated GLA Carbon Emission reporting spreadsheet submitted December 2023
6	(Overheating) Representative model samples requested	Updated Overheating Assessment submitted December 2023
10	(Be Green). Clarification on PVs welcomed. Further detailed roof layout requested to demonstrate PV installation maximised.	Design amendments to the roof have enabled the increase in PVs from 130.5 kWp of PV to 150 kWp.
11	(Be Green) Clarifications welcomed that design decisions will not impede potential for heat pump contribution to be increased from 80%, and confirmation that	No [redacted] in approach.

	80% could be accepted at this stage. Condition recommended.	
13	(Be Seen Energy Monitoring) Request for submission via webform.	Webform submitted June 2023. To be updated if necessary.
15	The draft s106 agreement should be submitted when available to evidence the carbon offset agreement with the borough.	Noted. The drafty s106 will be submitted to the GLA at Stage 2.

Our amended documents, submitted December 2023 includean updated Circular Economy Statement (and updated spreadsheet), Energy Statement, Sustainability Statement, Whole Life Carbon Assessment and GLA carbon emission reporting spreadsheet.

A key improvement within our December 2023 submission includes design amendments to the roof, which enable the increase in PVs from 130.5 kWp of PV to 150 kWp, representing an increase of 19.5kWp from the original submission.

The combination of Be Lean, Be Clean and Be Green measured outlined in the updated Energy Statement result in an overall 56% reduction over the Part L 2021 baseline. Compliance with both London Plan Policy SI2 and Policy C15 of the Merton Core Strategy is therefore achieved.

Less exposure to sun along with limited area of roof left once other plant, access and maintenance areas are allowed for

Larger area for flower rich green roof

Larger area for flower rich green roof

Larger area for flower rich green roof

Limited area of roof left once other plant, access and maintenance areas are allowed for

Area overshadowed by taller buildings to the south and west. Also limited area once access and maintenance areas allowed for

Clear area required for safe access between roofs for cleaning and maintenance

Additional plant likely required for energy strategy or telecoms equipment

Constrained location between two higher roofs

Limited area of roof left once access and maintenance areas allowed for

Indic. PV panels

Plant

NOTES

Copyright Rolfe Judd Ltd

1 The Contractor must check and confirm all dimensions
2 All discrepancies must be reported and resolved by the Architect before works commence
3 This drawing is not to be scaled
4 All work and materials to be in accordance with current applicable Statutory Legislation and to comply with all relevant Codes of Practice and British Standards

1:500 scale bar for calibration

0 5 10 15 20 25m

N

Rev	Date
P04 Issued for Planning	05/12/23
P03 Work in Progress	29/11/23
P02 Landscape amendments for planning	08/06/23
P01 Issued for Planning	08/12/22

ROLFE JUDD / ARCHITECTURE
OLD CHURCH COURT, CLAYLANDS ROAD, LONDON SW8 1NZ
/ T 020 7556 1500 / www.rolfe-judd.co.uk

Client
St. William

Project
Mitcham Gas Works
CR4 3ED

Drawing
General Arrangement
Proposed Roof Plan

Scale	Date	Status
1:500 (A1)	Nov 22	Planning

Job Number	Drawing Number	Revision
6374	T20109	P04

G:\6374\T_Series\General\T20\T20109

0 10cm

MITCHAM GASWORKS
January 2024 Update

APPLICATION

- Resubmission of plans and reports under original application number 22/P3620.
- Original application submitted in December 2022 for:

"Erection of new buildings to provide residential accommodation (Class C3) and flexible commercial/community space (Class E and/or Class F2), with associated access, parking and landscaping arrangements, including the demolition of the existing telecommunications mast and re-provision of new telecommunications mast."

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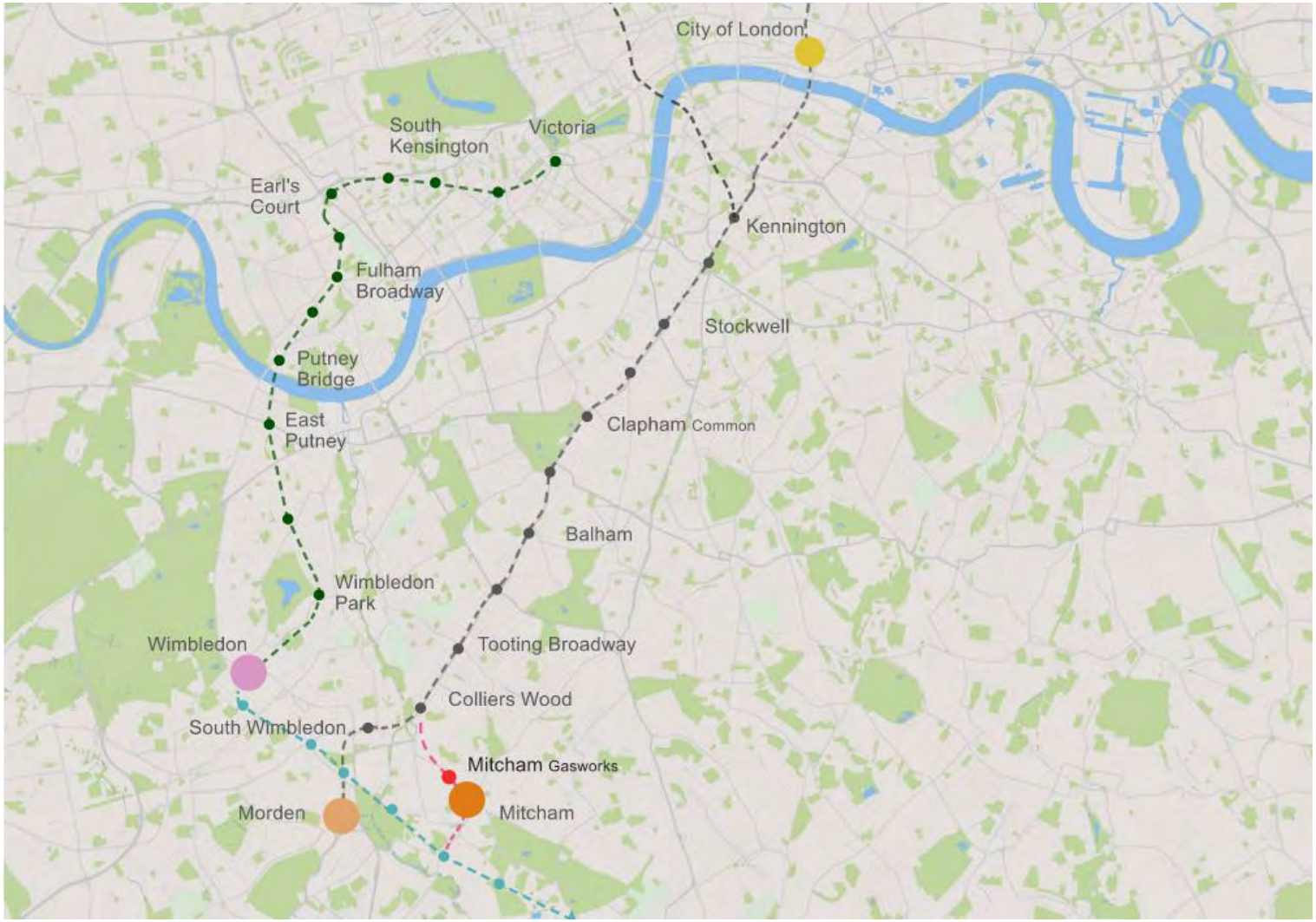
Site Location & Description

LOCATION



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LOCATION

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LOCATION

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THE SITE BOUNDARIES

1

2

3

4

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SITE HISTORY

- Closed off from the public for over 150 years
- Used for gas production and storage
- Gas production ended in 1960
- Final largest gasholder remained until 2021

1 Site plan 1952
2 Aerial view 1937
3 Portland Road 1970
4 Western Road 1960
5 Southern end of Western Road 1975
6 James' Estate 1975

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Scheme Overview

KEY [redacted]

- Homes reduced from 595 to 579 (remains within LB Merton's draft site allocation for 500 – 650 homes)
- Dual aspect increased to 79% (previous scheme was submitted as 65% but 48% when measured against new Housing Design Standards LPG)
- Introduction of second stair for all buildings over 18m
- Massing reduced along Portland Road (north) and Hay Drive (west) – following feedback from both GLA and LBM
- Parking increased from 0.24 to 0.27 parking spaces, including visitor and motorcycles (at the request of LB Merton)
- Improved delivery, access and servicing arrangements

SCHEME WITHIN WIDER CONTEXT

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KEY FEATURES

- Updated scheme by Rolfe Judd Architects
- 579 homes
- 35% affordable (70% rent / 30% intermediate)
- 3,093 sqft non residential floorspace (flexible commercial / community use)
- 0.27 parking provision

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INCREASED DUAL ASPECT / ARTICULATION

Previous Articulation

Proposed Articulation

- Dual aspect increased to 79%, submitted at 65% but was 48% when measured against 2June 2022 guidance

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BUILDING HEIGHTS

- Heights remain broadly the same as original submission
- Set backs to Portland Road & Hay Drive
- Emerging allocation for up to 9 storeys
- Heights of up to 9 storeys within central part of site
- 5 storeys around the perimeter
- 1 storey podiums

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Click &
Collect

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GLA Stage 1 Comments

LAND USE PRINCIPLE

"The redevelopment of this brownfield site for a residential-led mixed-use development is supported in principle, in line with Policy H1 of the London Plan."

- Site allocation and principles of development remain [redacted]
- Local Plan undergoing examination
- The Council proposes to allocate the site for **500 - 650 homes**, including **heights up to 9** storeys and with a **replacement telecoms mast on top of the tallest building**

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HOUSING

"The site is a surplus utilities site and the 35% affordable housing threshold applies. The proposed development includes 35% affordable housing by habitable room including 70% Social Rent and 30% London Shared Ownership and therefore could follow the Fast Track Route. An early-stage review and affordability levels should be secured."

- Revised scheme continues to propose 35% affordable and 70% rent / 30% intermediate
- Fast Track Route should continue to apply

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URBAN DESIGN

"The development layout and massing strategy are broadly supported. Refinements to height, scale, layout, architecture and materials and public realm should be considered. GLA officers consider that the proposals would result in a very low level of less than substantial harm to the nearby Mitcham Green Conservation Area and the Grade II Listed St Peter & St Paul Catholic Church."

- The layout of buildings was supported and remains broadly the same
- The car free central open space is retained
- General heights including location of taller buildings were supported and remain broadly [redacted]
- Daylight Sunlight results continue to perform well with a slight improvement to internal daylight levels
- A second stair has been added to all buildings over 18m for fire safety

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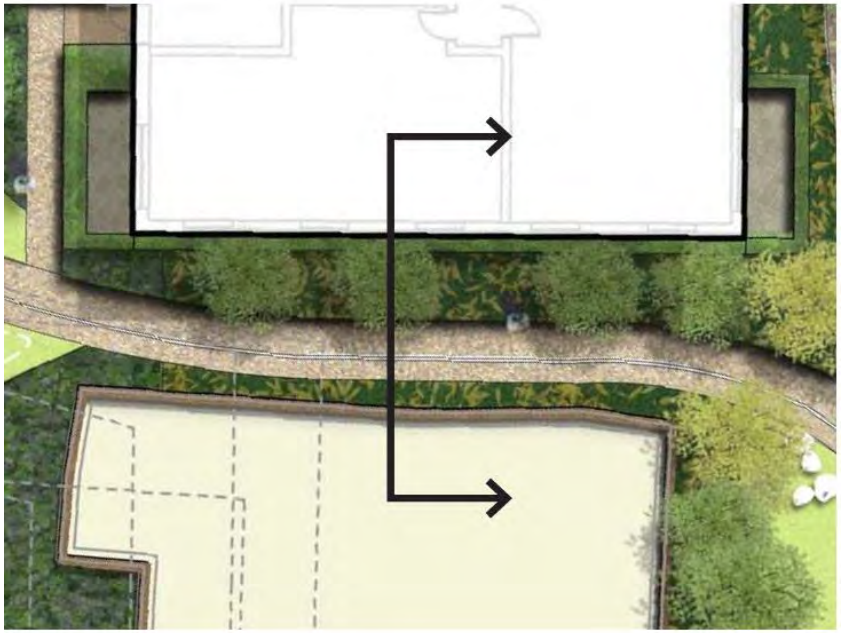
URBAN DESIGN

Routes to the north of central PRS

- ***Concerns were raised over size of buffer zones between path and ground floor residential units***
- Path has been amended to provide a 3m planted buffer to provide adequate privacy to the ground floor units



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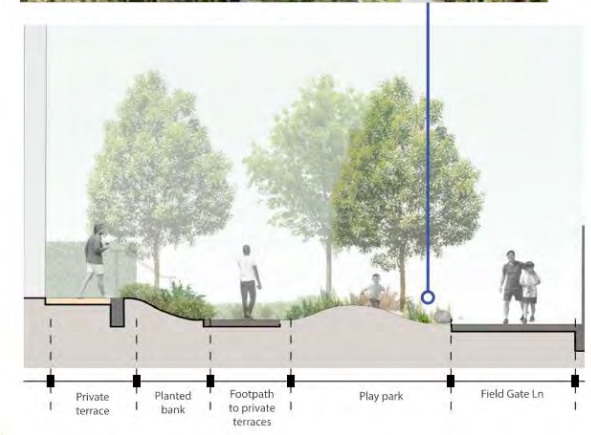
URBAN DESIGN

Field Gate Lane Boundary

- ***The boundary treatment along Field Gate Lane was queried***
- The existing wall will be removed, so Field Gate Lane connects directly into the site along its entire length



URBAN DESIGN

Portland Road relationship

- ***The step in heights from the existing Portland Road houses to the proposed scheme were seen as a significant jump***
- A set back has been provided on Portland Road to improve the relationship with the existing houses and add architectural interest
- Separation distance from the proposed scheme to the existing housing typically exceeds 18m to the flank walls, which contain no windows

Previous Proposals

New Proposals

URBAN DESIGN

Portland Road relationship

Previous Proposals

New Proposals

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URBAN DESIGN

Location of affordable housing

- ***Concerns were raised that social rented homes do not have access to communal podium gardens***
- The scheme is designed as tenure blind
- All homes will have access to podium gardens via fob access, with details to be agreed with the registered provider
- Some affordable housing has been relocated into Phase 1 as shown on the below plan

Private Dwelling | Intermediate | Low cost rent

Tenure	PD	SR	SO	TOTAL
Total Units	396	123	60	579
Total HR	1007	380	164	1551

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TfL COMMENTS

- **Pre-apps included discussions on relocating the bus cage but this is not mentioned?**
  - No longer required
- **Car parking provision accords with London Plan**
  - Provision should still accord with London Plan
- **If CPZ implemented, then condition required that residents cannot apply for parking permits**
  - This is accepted and proposed
- **Some cycle stores appear very large and should be broken down to improve security**
  - The largest stores have been broken down into smaller stores (Blocks A and B)
- **Service vehicle trips underestimated and need updating**
  - Trip generation updated and provided in line with TfL recommendation shows that sufficient servicing bays are provided on site
- **Bus contribution of £475k or £950k required and to be agreed with LBM**
  - Contribution of £475k agreed

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SUSTAINABILITY

- **Key Points:**
  - PV provision increased from 130.5kWp to 150 kWp
  - 56% reduction over Part L 2021 baseline
- **Updated documents:**
  - Circular Economy Spreadsheet & Statement
  - Energy Statement
  - Sustainability Statement
  - Overheating Assessment
  - GLA Carbon Emission Spreadsheet
  - Whole Life Cycle Carbon Assessment
- **Not updated:**
  - GLA Memo spreadsheet
  - Be Seen spreadsheet
  - Be Seen webform – submitted in June – update required?

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QUESTIONS