Design & Access Statement

London Borough of Hillingdon

Harefield Hospital
Hill End Road,
Harefield,
UB9 6JH

Project
Royal Brompton & Harefield Hospitals Generator Replacement

Client
Harefield Hospital, part of Guy's and St Thomas' NHS Foundation Trust

Reference:
1933-DBC-ZZ-XX-RP-A-0030 P03

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Site Address:
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Design Team:
Architect - Design Buro (Coventry) Ltd

Reference:
1933-DBC-ZZ-XX-RP-A-0030

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P02	S2	17/09/2025	Updated in line with comments	JAS
P03	S2	18/09/2025	Updated in line with comments	JAS

Section 1: Introduction

01 Introduction

This Design and Access Statement has been prepared by The Design Buro for Guy's and St Thomas' NHS Foundation Trust.

This Design and Access Statement is to support the application for the replacement of the Harefield Hospitals Generators. The report will provide information on the existing infrastructure, the proposed mitigations regarding disruption to the hospital and the proposals for the new generators which focuses specifically on the generators which serve substations 2 and 3.

The site infrastructure is configured with 3 Substations, each of which serve LV panels that are provided with standby generation. On two of the three substations the standby generation has failed namely substations 1 and 2 and temporary sets are in place. The temporary hire sets have had instances of vandalism and theft which has left the hospital at risk, especially in relation to the generator substation 2 which serves vital hospital services. Existing generator equipment on-site is beyond economical repair and does not align with substation/load capacity requirements on-site, they have either failed or close to complete failure. The replacement of the generator serving substation 1 has recently received planning permission, please refer to planning reference number - 9011/APP/2024/3347

Given the requirement for Harefield Hospital to deliver important, round-the-clock patient care, there is therefore a critical need to ensure that the power supply and generator equipment associated with the Hospital is resilient and overall fit-for-purpose. Whilst temporary (rented) generators are in-use on-site to help address existing capacity concerns, this does not provide the Hospital with a permanent nor cost effective solution not to mention the existing generator arrangements are not HTM 06:01 compliant in terms of resilience in number of generators and fuel storage.

All the above combined have resulted in an urgent need to deliver permanent replacement generators on-site within the short-term. Failure to do so will significantly compromise the ability for the Hospital to deliver the much needed medical/patient related services which it currently provides.

The proposal is to install N+1 generators per substation, rated to the full output of the transformer output which allows for future proofing and growth of the site.

The generators (and associated works) are proposed in the same location that existing generators serving substation 2 is located - this is the result of extensive design optioneering and the location is fundamental to the operation of the generators as follows:

- Generators (alongside associated enclosures, fuel tanks and control room installations) are proposed within the southeast of the Hospital site (adjacent to its boundary with Vernon Drive).

Section 2:
Site and Surroundings

02 Location

Harefield Hospital is the largest specialist heart and lung centre in the country. It is located in Harefield, Uxbridge and provides world class clinical services as well as medical research, innovation and education.

Harefield Hospital sits on a large detached site, its evolution started in 1915 when it was a war hospital during the First World War. The sweeping symmetrical façade of the original ward block and the children's wing were erected in 1933, both of which are listed under architectural or historic importance. The site also sits within the Harefield conservation area within a Green Belt Zone, therefore it is a site of importance.

The existing generator sites are split between the north and south side, located in proximity according to their linked substation in the event the substation were to fail. However, as aforementioned the existing generator arrangements are not HTM 06:01 compliant in terms of resilience in number of generators and fuel storage, this is combined with the fact that two of the three substations the standby generation has failed namely substation 1 and 2 which has left the hospital at significant risk.

The site is accessed off Hill End Road, just off Rickmansworth Road and the immediate surrounding areas are predominantly residential, with the inclusions of Harefield Library and The Kings Arms pub. Harefield Highstreet is just 0.4 miles away or an 8-minute walk, where plenty of eateries and local amenities can be found.

The proposed generators which will serve sub-stations 2 & 3 will be located in replacement of where the generator serving sub-station 2 is situated. Due to them both being undersized and both being situated in one location rather than being split as they currently are, the proposed compound will need to increase in size. Further details on the proposed layouts can be found in Section 3.

Harefeild Hospital Main Entrance - Listed Facade

02.1 Location Map

The map shows the existing generator and fule tank positions in relationship to the overall hospital site.

Map Key

- Harefield Hospital Site Boundary
- Proposed Red Line Boundary
- Existing Genrator & Fule Tank Positions

Refer to drawing: 1933-DBC-ZZ-00-DR-A-0001

02.2 Site Photos

Generator Serving Substation 2:

Existing generator serving substation 2 has failed and temporary sets are in place, however this set have had instances of vandalism which leaves the hospital at risk. Existing generator is not HTM compliant as it does not provide N+1 as fail safe design.

Substation 2 Generator

Generator Serving Substation 3:

Whilst the existing generator is operational it is not HTM compliant as it does not provide N+1 as fail safe design.

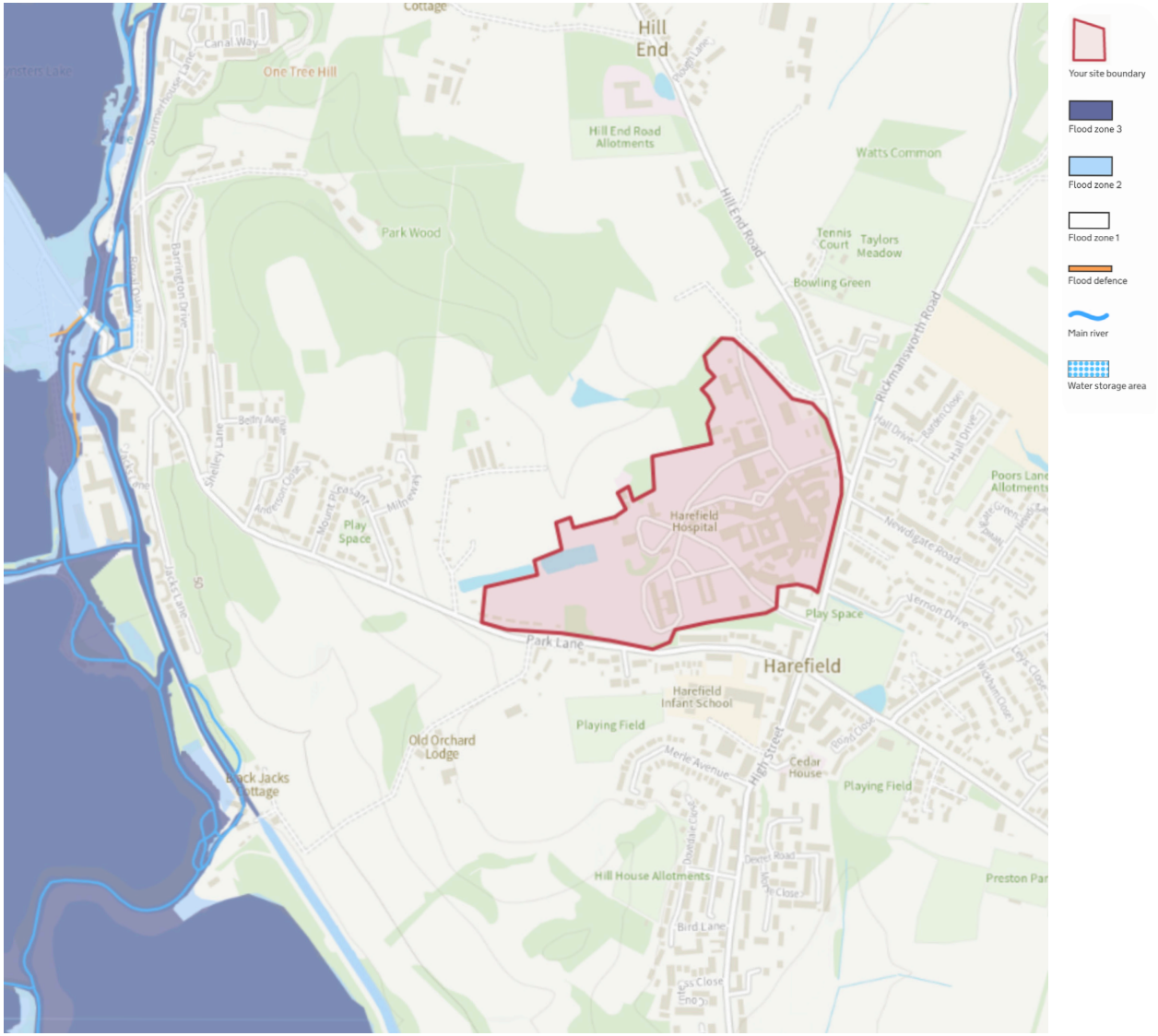
Substation 3 Generator

Generator 2 & 3 Access:

The photo below denotes the access/fire road that serves the south site of the site and needs to remain unobstructed at all times.

02.3 Flood Risk

As indicated by the flood risk map obtained from https://flood-map-for-planning.service.gov.uk, the Harefield Hospital site sits within Flood Zone 1 which indicates there is a low probability of flooding.



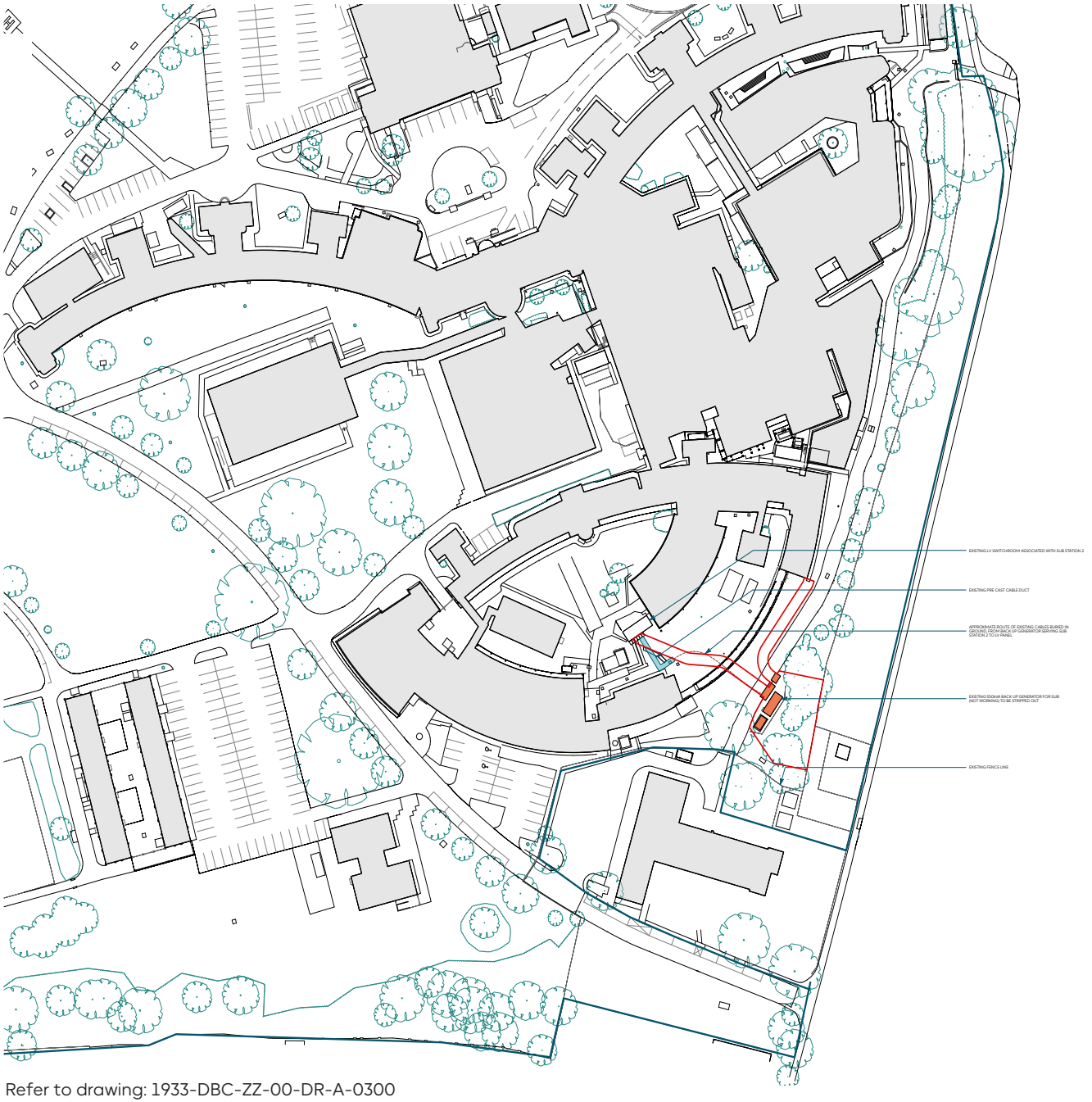
Section 3:
Proposal Reasoning

03.1 Site

The existing electrical infrastructure does not comply with HTM 06-01, and the existing standby generators are non-operational due to vandalism, this poses a severity of risk to the hospital. In the event of a mains power failure to the substations, the hospital would face a catastrophic loss of electrical supply. Such an outage would jeopardize critical clinical services, patient safety, and overall operational continuity.

Given the essential nature of uninterrupted power within a healthcare environment particularly in areas such as intensive care, operating theatres, and emergency departments this presents an unacceptable risk. The absence of a reliable secondary power source directly contravenes the principles of electrical resilience mandated by HTM 06-01.

As a result, there is an urgent requirement to install new standby generators along with the necessary supporting plant and infrastructure. These systems must be designed and implemented to meet full HTM 06-01 compliance, ensuring that, in the event of a power outage, the hospital can maintain operations. This investment will significantly enhance the hospital's resilience, safeguard patient care, and align the facility with statutory and best-practice standards for electrical systems in healthcare settings.



Refer to drawing: 1933-DBC-ZZ-00-DR-A-0300

03.1.1 Sub-Stations 2 & 3

The proposal is to strip out and remove the existing Sub-station 2 redundant 500kVA generator and remove the generator currently providing back up to substation 3.

These will be replaced with two new containerised 1250kVA generators to provide N+1 resilience to both substations 2 and 3. We are proposing to install the new generators in the same location currently occupied by the redundant 500kVA generator serving substation 2, which is located to the rear of the HDU and Heart Science Center. The size of each of the new 1250kVA containerised generators are 10m long x 3.3m wide x 6.45m high with an approximate weight of 33100kg.

We are proposing to install a new 200-hour bulk fuel tanks, to comply with HTM 06-01 requirements, for the aforementioned generators which will be located adjacent to the new generators.

The route for the cabling will be via new precast cable ducts with removable lids in a new trench from the generator location to meet up and match with the existing precast concrete duct.

The proposed compound is to be located in replacement of the existing generators. The existing non-compliant generators are not within a compound and have an area of 65m2. The new proposed compliant solution has an area of approximately 150m2 with a compound totalling 300m2.

The order of works for the substations will be:

- Whilst the proposed work is taking place a temporary generator will remain connected to provide backup power to substation 2, and the existing 1350kVA generator will provide back up to substation 3. This will only be removed once the works are near completion and a temporary set will then be in place to allow for connections of the new generators which will mean the existing set will need to be disconnected.
- Relocation of substation 2 temporary generator and associated controls to an agreed coordinated location to allow for works to commence, thus allowing the temporary generator to provide back up support for the duration of the works
- Isolation and removal of the subs station 2 redundant generators and associated fuel tanks
- Installation of concrete bases, by others
- Removal of trees and vegetation
- Installation of new precast cable duct and cabling, from containerised generators to existing LV switchboard
- Installation of containerised generators, bulk fuel tank, generator control panel, and associated generator control equipment.
- Removal of existing generator and connecting of new temporary to allow for connections of new permanent generators into system.
- Removal of the hire set.

03.2 Site Constraints

Wide Scale Site Constraints:

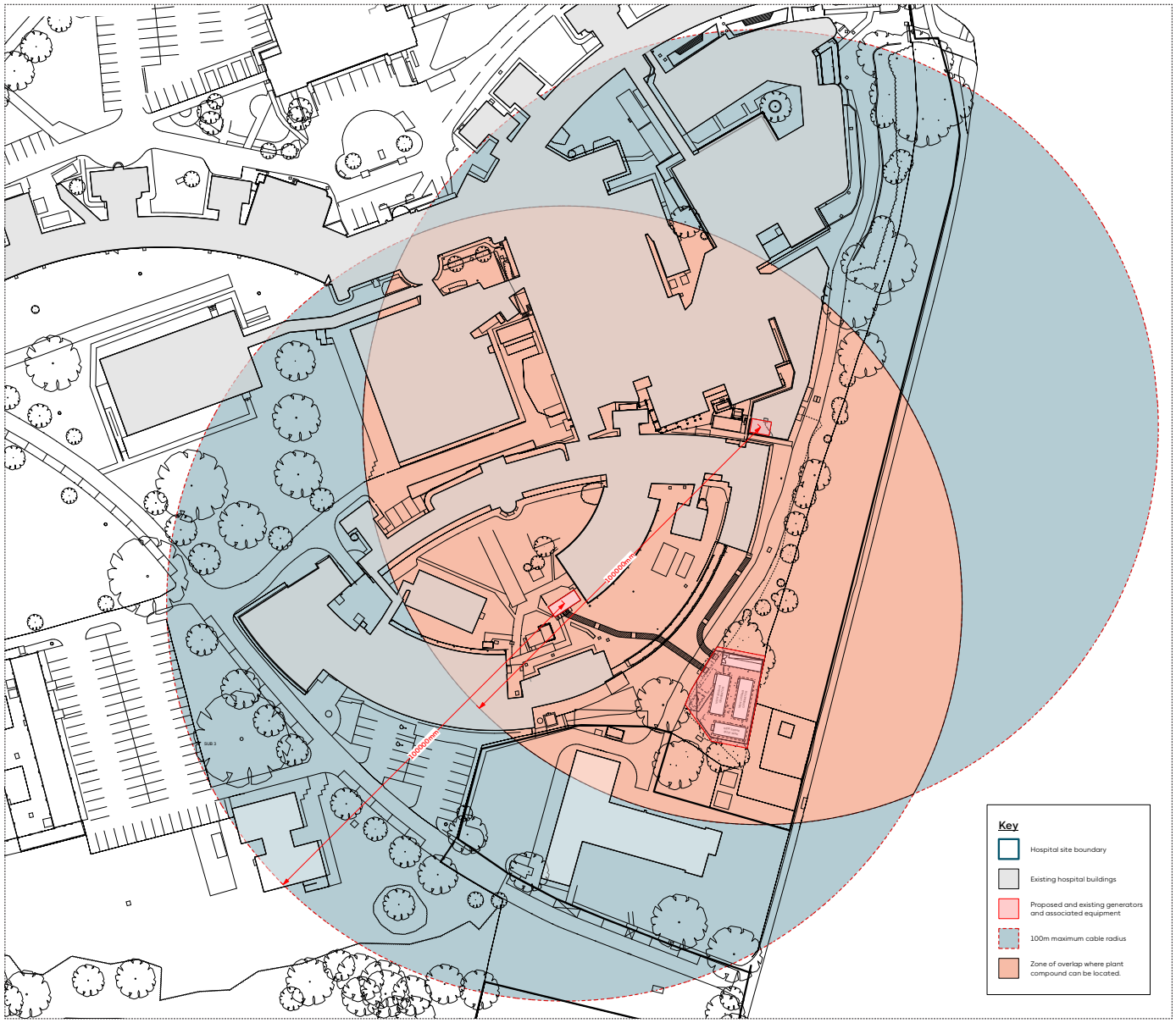
The proposed generator location has been selected for several reasons. The first is its proximity to both substations, as it's closet available space large enough to accommodate the installation and is roughly halfway between both substations. Also, the proposed compound is in an area already utilised for Sub 2 generators.

We also have other limitations with regards the cabling, as the new generators are required to connect to existing critical infrastructure, we are limited to the size that the generator cables can be, as the existing protective devices are only capable of accepting a certain size and number of cables.

The existing earth fault levels within the building need to be maintained so that protective devices within the hospital operate within the correct timeframes when on the generators, so the associated Ze of the generators needs to be low to facilitate this.

This gives a preferred radius of 100 metres from the substations the generators will be serving.

The generators location has been carefully considered for not only proximity to the existing substations they will be serving but also maintaining a single point of access in the event of an emergency where the hospital relies on the generators for power. It also benefits for ongoing maintenance and security.



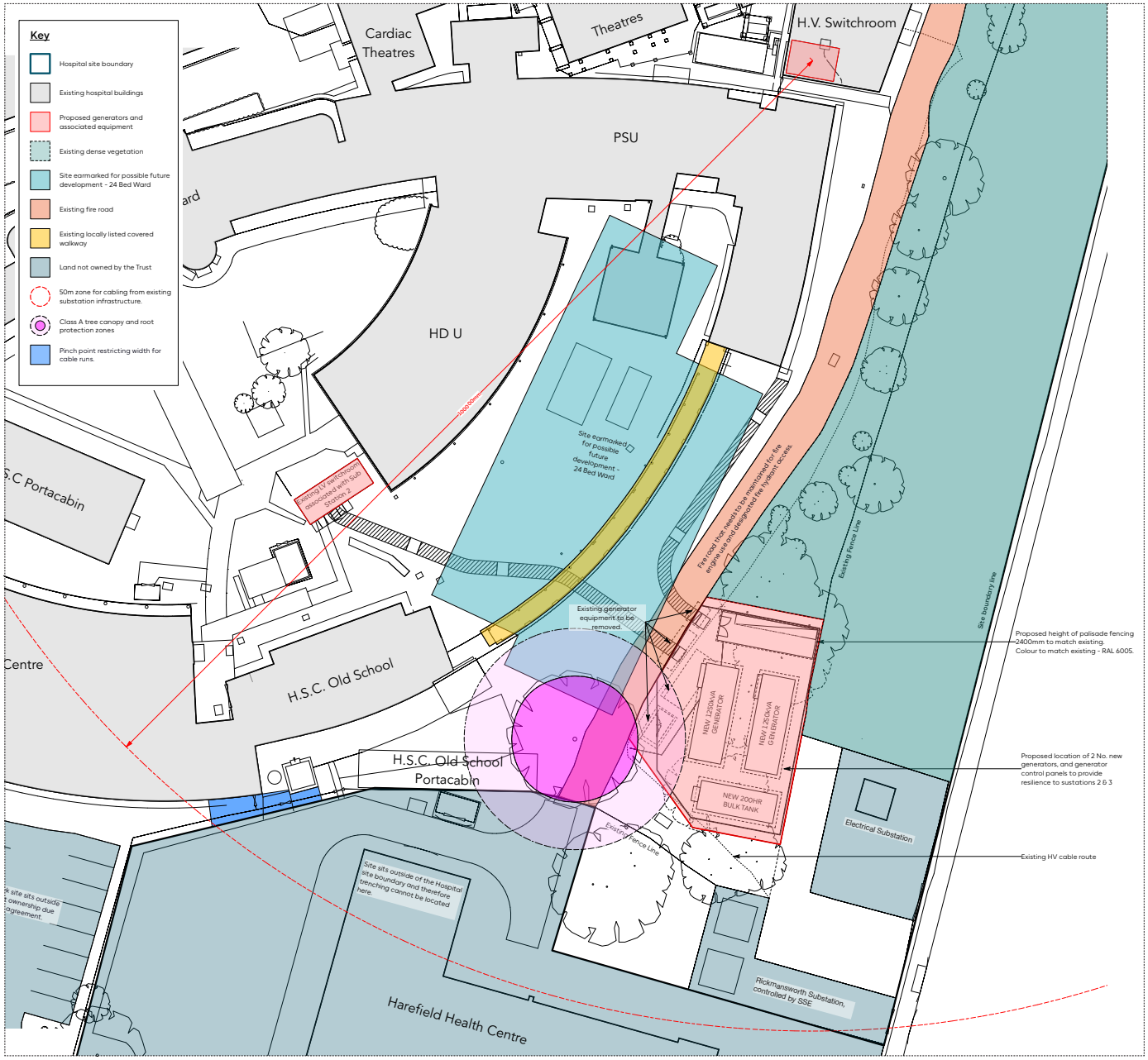
03.2 Site Constraints

Site Constraints:

The drawing has been prepared as an exercise to determine the most suitable location for the proposed installation. This assessment has been carried out in coordination with our planned future developments, consideration of land ownership (including areas not belonging to the Trust), and evaluation of the technical feasibility of the installation. The exercise also takes into account the requirements for connection to key components of the existing electrical infrastructure, the practical ability to construct and install the system, and the need to avoid significant redevelopment works (including demolition of existing high-risk patient areas).

It is critical that the generator locations are identified with precision to address the significant risk associated with power loss to the hospital. Any change in location would not only compromise the hospital's operational resilience for the reasons outlined above but would also necessitate extensive additional works. This would substantially increase costs, creating a very real risk that the scheme would not be funded, leaving the hospital exposed to prolonged operational risk and potential patient safety impacts.

The next few pages highlight the reasoning for the proposed location through an options appraisal.



03.3 Options Appraisal

Option 1:

Plant equipment looked at being orientated in a line to relinquish the bulkiness of the compound. The following observations have been made:

- Strengths:

  o Ensures compound is located proximate to key utility / energy connections on-site

- Weaknesses:

  o Length of the compound results in an approximate vegetation clearance of 750m2. Number of trees proposed for removal subject to ongoing arboricultural surveys.

  o Length of the compound results in a clash with the fire road which is designated for fire engines and needs to remain clear of obstruction at all times. As such this results in Option 1 not being viable.

  o The fencing to the compound sits at 134.5m in total length of the perimeter. The added fencing results in questioning the viability and feasibility in comparison to over options.

  o The most southern point of the proposed compound clashes with existing below-ground services which would require rerouting as part of works.

- Opportunities:

  o Powder coat security fence and plant equipment to RAL 6005 green to blend fencing and equipment into dense vegetation backdrop.

- Threats:

  o Scheme cost and viability considerably challanges, without resulting in any design / visual impact benefits (when compared to other options)

Option 2:

Plant equipment looked at being more compact to relinquish the length of the compound. The following observations have been made:

- Strengths:

  - o Less impactful on vegetation clearance than Option 1. Number of trees proposed for removal subject to ongoing arboricultural surveys.
  - o The compact compound ensures that the fire road remains clear of obstruction and limits the redirecting of below-ground services whilst maintaining proximity to necessary energy / utility connections.
  - o The fencing perimeter length of the compound sits at 82.6m, the lowest of all options which promotes the viability and feasibility of the project.
  - o Fire road is maintained and clear of obstruction resulting in viability / deliverability benefits for the Trust and the project.
  - o Discrete corner location on-site.
  - o Benefits from existing tree screening to help minimise visual impacts
  - o Not adjacent patient areas.
  - o Ease of access and maintenance

- Weaknesses:

  - o Approximate vegetation clearance of 560m2 required.

- Opportunities:

  - o Powder coat security fence and plant equipment to RAL 6005 green to blend fencing and equipment into dense vegetation backdrop.

- Threats:

  - o None

Option 3:

Plant equipment looked at being located away from the boundary and closer to the substations which are being served by the proposed generators. The following observations have been made:

- Strengths:

  - o No impact on vegetation.

  - o The generators are situated close to the substations which the generators serve in the event of an electrical shortage. Service runs to the substations are reduced.

- Weaknesses:

  - o This location would fundamentally prejudice opportunity for ward expansion in the future - therefore not an option for the Trust as this would prevent hospital ward expansion.

  - o The fencing perimeter length of the compound sits at 83.2m, which is higher than Option 2.

  - o Proximity to hospital buildings puts the compound at risk of disrupting patients outlook.

  - o Compound proximity would result in unsightly views out of windows neighbouring the compound.

  - o Impact on setting of locally listed building.

  - o Would require (at least partial) removal of existing walkway

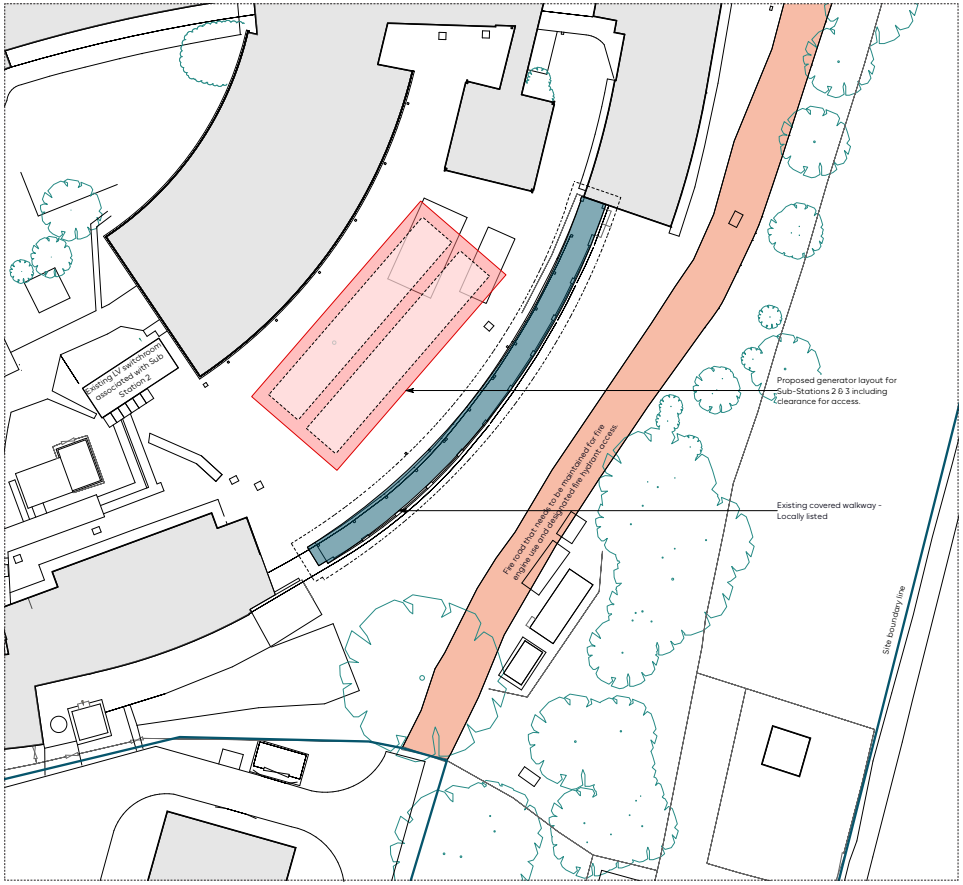
- Opportunities:

  - o None

- Threats:

  - o Directly adjacent patient areas which would impact their view out which has been known to aid recovery.

  - o This area has been highlighted for future development for an additional ward and would fundamentally comprise potential future hospital expansion plans and is not workable for the Trust



03.4 Proposal

The table below notes how the new proposal has responded to previously sort advice. This is further demonstrated on page 21 with the proposed compound and plant arrangement.

Topic	Pre Planning Advice	Responce
Vegetation Clearance	The proposed 560sqm of vegetation clearance is currently considered to 'amount to harm to the Green Belt'.	The proposed scheme has a reduced vegitation clearance of 343sqm
Feasibility of Re-using existing generator locations	Whilst the 'community need' for the backup generators is understood, officers require further justification as to 'why the existing Generator 2 and 3 locations' cannot be re-used.	The proposed compound is in the location of the vandalised generators serving substation 2. The existing location for generator 3 is to be used for UPS/IPS which serves as another life safety critical part of the infrastructure
Tree Matters	An Arboricultural Survey will also be required at application stage to justify tree removal and a tree replacement strategy submitted.	An Aboricultural assessment is being prepared to support the application. All efforts have been made to reduce the impact on the surrounding trees, please refer to page 24 for further information.
Screening / Fencing / Visual Appearance	Officers have stated that the previous opaque / acoustic screening may be help mitigate visual impacts. The visual appearance of the proposals from 'on-site medical receptors' (assumed to be hospital ward windows etc.) should also be considered.	The proposed security compound is shown as palisade fencing which is present on site and therefore seen as continuing the exiting vernacular in both appearance and colour. The proposed location will not be overlooked by patient areas.
Noise	A Noise Impact Assessment should be submitted at application stage.	A Noise Impact Assessment has been prepared and and forms one of the supporting documents to this application.

03.4 Proposal

Proposed Plan

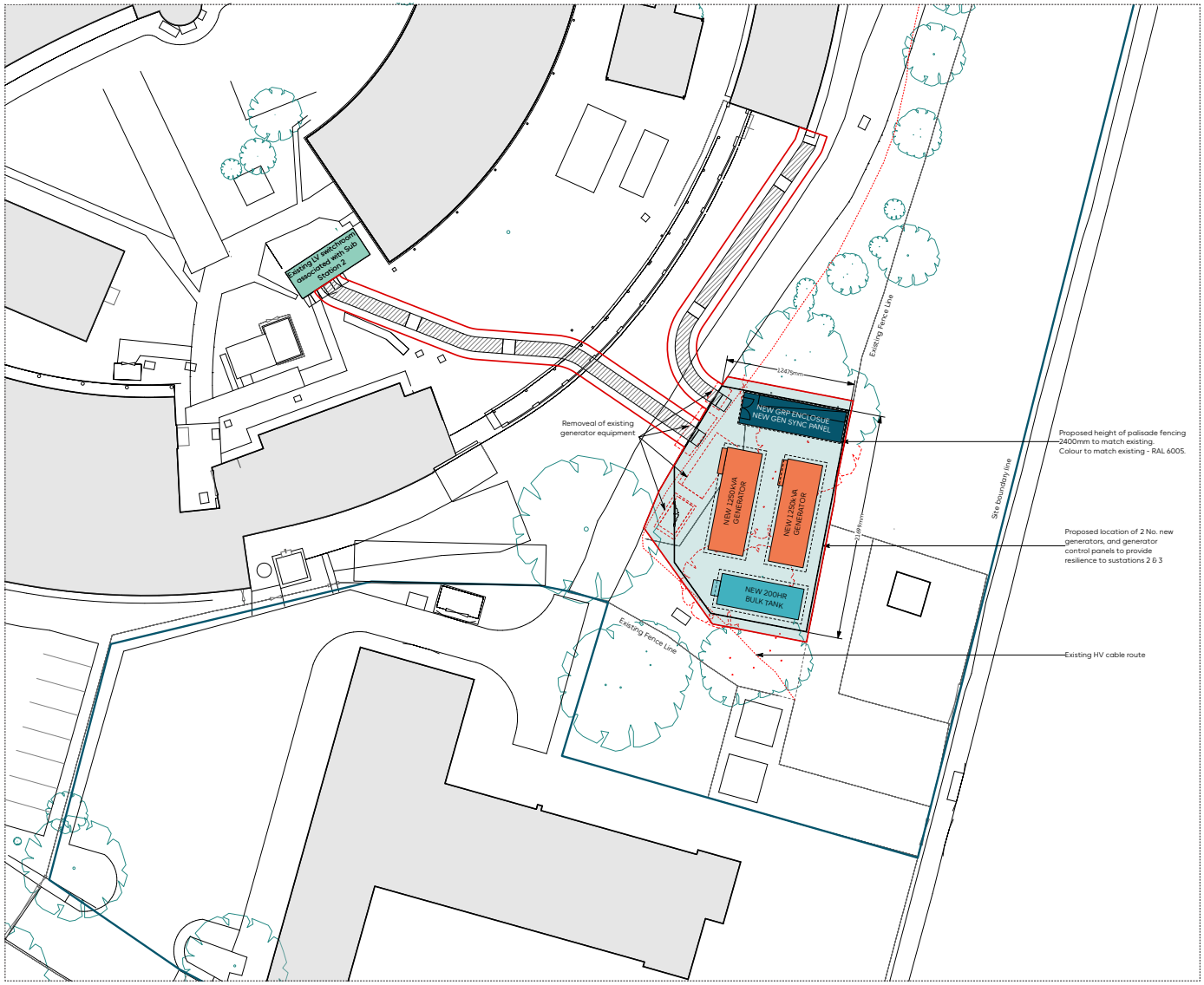
The proposal is a result of reviewing the comments at pre-planning and the above site analysis which is believed to provide a design which satisfies all parties.

The extent of vegetation and tree clearance has been reduced in response to feedback, achieved by decreasing the number of generators from four to two. As a result, the overall footprint has been minimised as far as practicable, whilst ensuring the critical needs of the hospitals opertaion

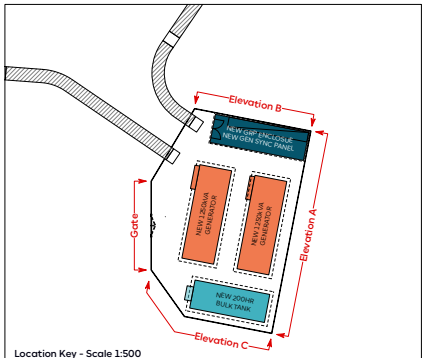
As previously mentioned the site has experienced vandalism to plant equipment and as such security of the plant areas is a high priority to ensure the hospital is not left in a vulnerable position in the future as is has been to date.

The proposed plant compound is propsed to have Palisade fencing and gates to secure the compound at a height of 2.4m to match the existing security fencing on site.

It is noted that adjacent to the proposed site, Palisade fencing has been installed in a powder-coated RAL 6005 colour green. As such we would propose that the new compound to be installed in the same RAL colour.



Proposed Elevations

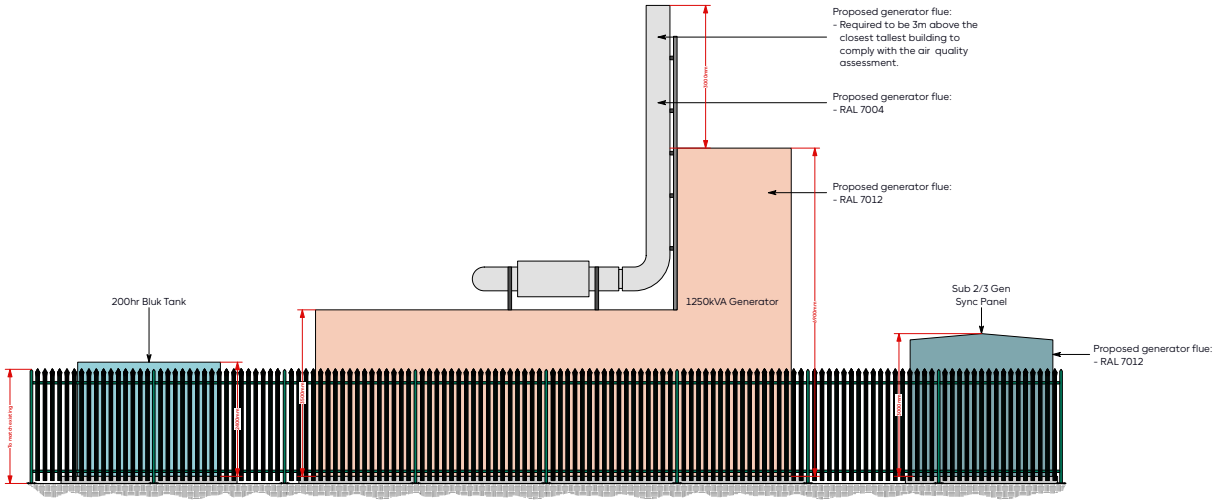


Location Key - Scale 1:500

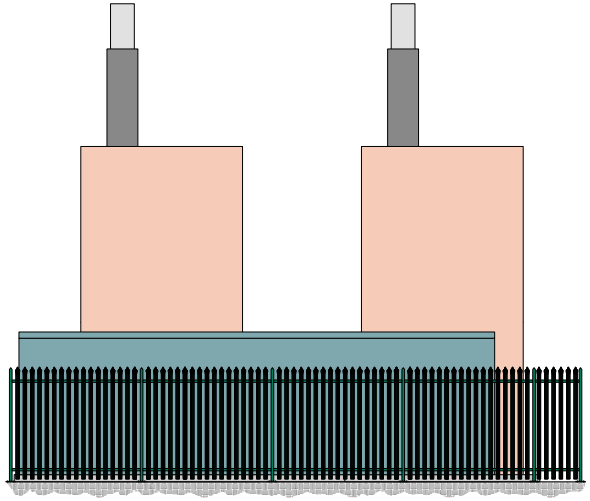
Palisade Fencing to Plant Compound's:

The elevations prepared are indicative only and all details are to be prepared by a fencing specialist for architects review. Subcontractor to visit site to confirm the below matches the existing site palisade fencing.

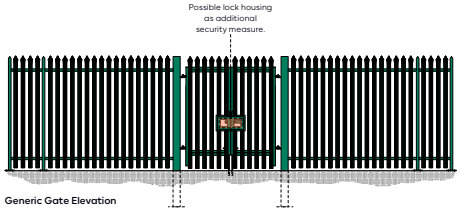
Palisade fencing is to be designed and installed as per guidance set out in BS 1722:
- Pales style - Corrugated to match existing.
- Pales top - Trippel pointed and splayed to match existing.
- Fencing to be fit for security purposes.
- Finish - Galvanised steel to be powder coated RAL 6005 to match existing.
- Post Centres to be at 2.75m



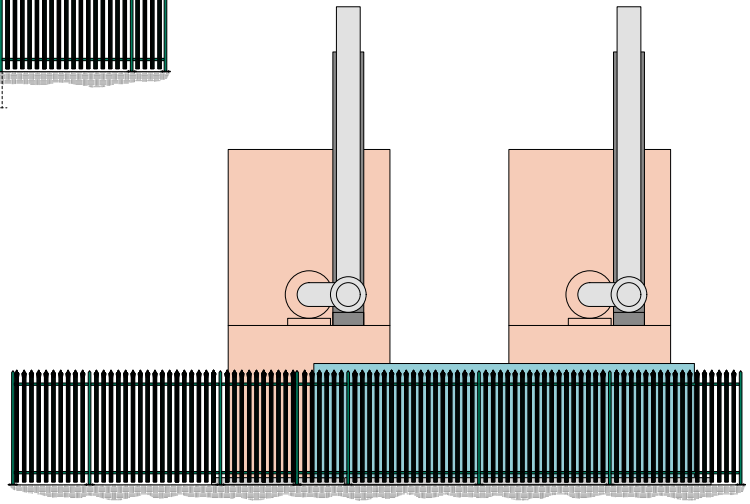
Generator Compound Elevation A - Plant Massing



Generator Compound Elevation B - Plant Massing



Generic Gate Elevation



Generator Compound Elevation C - Plant Massing

03.5 Scheme Considerations - Ecology and Trees

Tree & Vegetation Clearance:

The proposed generator compound serving substations 2 & 3 is positioned as such to contain both sets of serving generators within one compound. As a result vegetation clearance is required to provide the necessary clear area. The area of proposed site clearance can be seen on page 24.

It is proposed to leave a substantial vegetation barrier between the proposed compound and the residential properties on Rickmansworth Road. It is also proposed that the generators orientation be such that intakes and exhausts are directed away from neighbouring housing.

Please see the adjacent photos for examples of the existing boundary conditions and density of vegetation. The images show the existing conditions.

Please refer to the supporting documents on both arboricultural and ecological matters

Arboricultural Matters:

The arboricultural report identifies 3 tree categories which are as follows:

- Retention Category A - These trees offer the opportunity to significantly contribute to the future of the site in arboricultural and landscape terms and their loss should be avoided.

- Retention Category B - The removal of Retention Category B trees should generally be avoided.

- Retention Category C – Trees in this category should not constrain the development of a site. Young specimens within this category offer future potential as established tree cover but could be removed and replaced or translocated to areas away from potential development to avoid their loss.

The proposed compound sites involve the clearance of Retention Category C trees.

Whilst the compound overlaps with the Category A tree, this is fencing only will have a localised foundation to the fence post and the appropriate digging methods can be taken to ensure the trees preservation. Trenching routing has been designed to avoid the root protection zone highlighted in the arboricultural report.

Please view the arboricultural report for further information.

Refer to drawing: 1933-DBC-ZZ-00-DR-A-0310

Section 4: Conclusion

04.0 Conclusion

In conclusion, the proposal has successfully addressed and integrated the feedback provided during the pre-planning stage, resulting in a design that is both more aesthetically sensitive and functionally efficient. The design evolution has led to a more refined and sympathetic approach that not only respects the site's context but also reduces the spatial impact through a significantly smaller footprint, reducing its impact on ecology and the greenbelt as a whole.

The plant equipment and the associated compound has been carefully selected and are in full compliance with the colour schemes and materials that were previously approved, ensuring that they continue the existing vernacular presence on site.

As such, the design is considered to be fully acceptable with the surrounding environment, effectively balancing the need for operational efficiency with contextual sensitivity.

Most importantly, the revised design guarantees the provision of a fully compliant and reliable backup power system, one that is crucial for the hospital's day-to-day clinical operations. This new system will ensure that in the event of a power failure, the hospital will have an uninterrupted power supply, thereby safeguarding critical healthcare services and patient safety. By addressing both functional and aesthetic considerations, this proposal demonstrates a thoughtful and well-rounded approach to meeting the hospital's operational needs and ensuring future-proofed resilience.

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