



PRECONSTRUCTION INFORMATION

Client:	Northern Lawn Tennis Club
Project:	Phase 1 & 2 Tennis Pitch / Padel Court
Reference:	19264
Date:	8th June 2023



Revision History

Revision	Date	Details
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1. Introduction & Instructions to Tenderers

This Pre-Construction Information document addresses the requirements of the Construction (Design and Management) Regulations 2015.

WT Partnership Ltd are appointed by the Client as Principal Designer for this project. Details of all parties associated with the project are shown with a description of the project in Section 2.

The Construction (Design and Management) Regulations 2015 require a Construction Phase Plan to be prepared prior to the start of the project and maintained until the end of the construction phase. The purpose of the Plan is to provide information and describe procedures that will ensure the health and safety of all those involved in the project.

A summary of the works covered by this plan is provided in Section 2. The plan draws together all the project-specific information provided by the Client, Designers and Principal Designer during the design and early planning stages. It identifies key health and safety issues, in particular those that a Contractor might not reasonably be expected to identify. The level of detail found in the plan will be proportionate to the anticipated risks involved in the project. Little emphasis is given to risks that are commonplace or those that a Competent Contractor would be expected to recognise. Information contained in this plan is intended to alert the Contractor to health and safety issues that may have significant resource implications or may affect the way that work is planned and carried out.

Regulation 4(5a) of the Construction (Design & Management) Regulations 2015 requires the Client to ensure so far as is reasonably practicable, that the construction phase of the project does not start unless a construction phase plan complying with Regulation 12(2) is in place and is project-specific and suitable for works to start on site.

Therefore, prior to the commencement of the construction phase, the Principal Contractor must submit the project-specific Construction Phase Plan to the Client to enable them to ensure compliance with the duty of Regulation 4(5a). Where the Client has designated to the Principal Designer the task of reviewing the construction phase plan, a copy of the plan shall also be sent to the Principal Designer.

The Principal Designer will assist and advise the Principal Contractor in the development of the Construction Phase Plan for this project as well as reviewing and advising on the suitability of any RAMS submitted by other contractors working on the project.

2. Description of Project

2.1. Project Description and Programme Details

Site address	Northern Lawn Tennis Club The Northern Palatine Road West Didsbury Manchester M20 3YA See Appendix A (Site Location Details)
Description of works	Removal of existing tennis courts and construction of new outdoor tennis courts, including associated external works, lighting and drainage and the construction of Padel courts including lighting, canopy structure and rainwater goods. Works will be undertaken at an operatorial sports facility that will still be in use and therefore need to be separated from the rest of the site operations and protection measures put in place to prevent harm to staff and users of Northern Lawn Tennis Club. Works are known as Phase 1 and Phase 2.
Programme	Contractor's mobilisation period: 2 weeks TBC Anticipated start on site date: 19th June 2023 TBC Project duration: 16 weeks TBC Anticipated completion date: September 2023 TBC Refer to most recent project programme.
HSE Notification	This project will be notified to the HSE prior to the construction phase starting on site by the Client or nominated person on behalf of the Client. A copy of the F10 will be provided to the Principal Contractor prior to works commencing on site.
Nature of project	Groundworks

2.2. Details of Project Team

Client	Northern Lawn Tennis Club The Northern Palatine Road West Didsbury Manchester M20 3YA	Contact: John Egan Tel: 07770 276201 Email: JEgan@laingorourke.com
Principal Designer	WT Partnership Chancery Place 50 Brown Street Manchester M2 2JT	Contact: Jason Gould Tel: 0786 739 6213 Email: jason.gould@wtpartnership.com
Contract Administrator	WT Partnership Chancery Place 50 Brown Street Manchester M2 2JT	Contact: Dale Egan Tel: 07772 478 802 Email: dale.egan@wtpartnership.com
Principal Contractor	Platt Construction Ltd McLintocks Hilliards Court Chester Business Park Chester CH4 9PX	Contact: Chris Platt Tel: 07740 736 935 Email: sales@plattconstruction.co.uk
Padel Court Contractor	Padel Tech Ltd 4-6 Lochside Way Edinburgh EH12 9DT	Contact: Andy Ponton Tel: 07472 715 791 Email: andy@padeltech.co.uk
HSE Local Area Office	Construction Division (HSE Nationwide, Post to Bedford office) Woodlands, Manton Lane, Manton Lane Industrial Estate, Bedford MK41 7LW Local HSE Office Bootle Headquarters Redgrave Court, Merton Road, Bootle, Merseyside, L20 7HS	
Local A & E Hospital	Manchester Royal Infirmary (Approx. 2.7 miles) Oxford Road Manchester Greater Manchester M13 9WL	

2.3. Extent and Location of Existing Records and Plans

The Principal Contractor must also refer to all Tender Documents for information/documents/reports provided at tender and details provided within the Contract Preliminaries for this project in addition to the below sections.

2.3.1. Existing Health and Safety File & Operation and Maintenance Manuals

No existing Health and Safety file or Maintenance Manuals are currently available for the planned area of work. For any clarifications on the site history or additional relevant site information the Principal Contractor shall liaise with the Client contact.

2.3.2. Existing Drawings

Please see **Appendix B** for available drawings/information noting the following in relation to existing layout:

- NLTC_Existing_SitePlan_2200302
- NLTC_Existing_Old_Indoor_Regeneration_SitePlan_2200302
- NLTC 2021 Phase 1b existing concrete drain
- NLTC_SitePlan_existing concrete ring beam plan
- NLTC 2021 Phase 1 Existing Block Plan 002
- irrigation layout
- Tennis Ring Beam detail
- NLTC_SitePlan_drains phase 1 & 2

2.3.3. Building Manual/Logbook

NA = Please refer to comments in section 2.3.1. above.

2.3.4. Ground Investigation

Please see **Appendix B** for all available drawings/information noting the following in relation to Ground Conditions:

- 100942 - Phase 1 & 2 - Northern Lawn
- 100942 Infiltration & DCP Report

2.3.5. Asbestos Register/Report

The Client has confirmed no asbestos containing materials are known to exist within the area of works applicable to this scheme. The Contractor should have in place control measures for uncovering unidentified materials during their works. These control measures should be included in the Construction Phase Health & Safety Plan.

2.3.6. Structural Report

NA

2.3.7. Other Hazardous Information Surveys

NA

2.3.8. Utility and Services Information

Please see **Appendix B** for all available drawings/information:

- irrigation layout

There is limited information available in relation to existing utility services within the grounds. The Principal Contractor is thus to proceed with due caution in executing the Works and carry out such further investigations as he may deem necessary to satisfy himself as to the location of the services on site. The Principal Contractor shall uphold and protect all pipes, ducts, sewers, service mains, overhead cables, and statutory undertakers' apparatus and make good at their own expense any damage caused thereto. The Principal Contractor shall make all necessary arrangements with the Authorities concerned for the diversion, if necessary, of any existing services as required for the purposes of this Contract.

2.3.9. Other

Noise Impact Assessment

- 16764-NIA-03 RevC

2.3.10. Client Management Procedures and Policies

NA

2.3.11. Mechanical Information

There is limited/no information available in relation to existing Mechanical services.

2.3.12. Electrical Information

There is limited/no information available in relation to existing electrical services that may be located within the ground.

2.3.13. Enabling Works

No enabling works are planned for this project.

3. Clients Considerations & Management Responsibilities

3.1. Structure and Organization

The Principal Contractor will be required to appoint a person who has responsibility for liaising on health and safety matters. This person will be expected to have sufficient authority to act on requests from the Client or their nominated representative and be able to provide suitable information on health and safety issues to the Client. The Principal Designer (Jason Gould) will assist and advise the Principal Contractor in relation to reviewing contractor RAMS, ongoing co-ordination in relation to H&S matters throughout the construction phase e.g., working safely with specialist contractors e.g., Padel Tech Ltd etc)

Co-ordination and liaison on health and safety for Client matters will be principally through the Contract Administrator. Client liaison matters will be reviewed at project progress meetings.

The Principal Contractor, with (where necessary) assistance from the Principal Designer, is expected to manage and implement site safety liaison between subcontractors, specialist contractors and, when necessary, neighbours, utility authorities, etc.

The Principal Contractor must assess the health and safety implications of any design changes or contract instructions. The Client, Contract Administrator and the Principal Designer must be advised immediately of any significant health and safety risks or significant changes to the programme or methods of working resulting from these changes.

3.2. Safety Goals for the Project and Arrangements for Monitoring and Review

The safety goals for this project are:

- No fatalities
- No major injuries
- No dangerous occurrences
- No exposure to substances and processes hazardous to health
- Remove and/or minimise, where reasonably practicable, the risk of ill health or injury to employees, subcontractors, and others, including the general public and users of the Northern Lawn Tennis Club facilities.

The Principal Contractor (PC) will manage, monitor, and review on an ongoing basis health and safety implementation and performance with the assistance of the Principal Designer.

Health and Safety will be a key item on the agenda of all project progress meetings. The Principal Contractor will be expected to provide a summary of any health and safety issues that have arisen since the previous meeting.

As a minimum, this will include:

- Health and safety incidents
- Safety Inspections and Audits (key issues, action)
- Health & Safety Executive visits

The Principal Contractor will make suitable safe provision for the following:

- Management of construction tasks,
- Arrangements for any 'Limitation of Access' areas on the site that has been highlighted by the Client,
- Arrangements for working at height,

- Entry into confined spaces,
- Adequate site accommodation and welfare facilities,
- Loading and unloading of materials and equipment,
- Safe storage of materials, plant, and equipment, etc,
- Access and egress to the site and security and isolation of the works,
- Establishing extent of and dealing with live and active utility services that may be affected by the works,
- Dealing with waste etc. in compliance with environmental legislation,
- Minimise exposure to dusts, noise, vibration, and heat,
- Provision and maintenance of a suitable site fire plan and emergency response plan,
- Suitable competent and trained staff and operatives; including allowing for those who cannot read and those that cannot understand English,
- Suitable plant and equipment properly maintained,
- Site traffic management arrangements and provision of banksman when required,
- Preparation and maintenance of suitable and sufficient risk assessments and method statements,
- Reviewing and considering the risk assessments and method statements of all contractors/ specialist contractors associated with the works,
- Appropriate site rules,
- Site safety induction,
- Site safety toolbox talks,
- Segregation of site traffic and pedestrians, including on site activity,
- Continuity of building/site operations with minimal disruption,

The Principal Contractor is to undertake their role in such a way to ensure that all relevant statutory requirements are adhered to as a minimum. In addition to the Principal Contractor and Clients routine reporting mechanisms, all accidents on site should be reported to the Client and Principal Designer (PD) as soon as relevant information is available.

3.3. Safety Inspections

The Client or a nominated representative of the same, may carry out health and safety inspections of the construction site, including welfare provision. The purpose of these inspections is to ensure that the Client is not in breach of their own statutory obligations. The Principal Contractor will be expected to co-operate and assist the Client with these inspections and to act on any reasonable suggestions that are offered.

3.4. Permits to Work and Authorisation Requirements

The Principal Constructor shall operate a Permit to Work system which complies with all current legislation and protects the Health and Safety of all building occupants and users, his employees, and his subcontractors. Copies of permits issued are to be kept in the Health and Safety file on or off site.

A Permit to work is required for, but not limited to:

- Hot Working
- Confined Spaces
- HV/LV Electrical Works

The Principal Contractor shall detail what Permits to Work they plan to use on this project within their Construction Phase Plan.

Where required the Principal Contractor is to seek a permit to work and/or formal authorisation to commence works from the following parties: -

- The appropriate Utility Service Companies
- The Client (or their FM Provider/Work Department)
- Local Authority
- The Contact Administrator

The Principal Contractor shall contact the above parties to determine any site or work specific safety rules that will be applicable to this project.

3.5. Emergency Procedures

Specific consideration is to be given to maintaining the emergency escape route from the indoor tennis courts building.

The Principal Contractor's developed Construction Phase Plan is to include a section detailing specific emergency procedures to be adopted during site hours and must align with the arrangements for the Northern Lawn Tennis Club. These procedures will include contact names and numbers of people that can deal with an emergency at any time.

A Fire Safety Plan and construction works Fire Risk Assessment proportionate to the size and complexity of the project is to be included in the Construction Phase Health & Safety Plan (CPHSP) before works commence on site. This should consider the existing site and be compliant with existing emergency arrangements.

The Principal Contractor's emergency procedures should address the requirements of the Fire Prevention on Construction Sites recommendations as per the Joint Code of Practice on the Protection from Fire of Construction Sites and Buildings Undergoing Renovation.

The Client, Principal Contractor, Designers and Principal Designer are to ensure that they follow HSE Guidance HSG168 (second Edition 2010) Fire Safety in Construction, where reasonable to do so.

3.6. Site Rules and Other Restrictions

The Principal Contractor will be required to establish site rules specific to the project as part of their developed Construction Phase Plan.

As a minimum, these will include:

- All visitors must sign in/out and follow the sites security requirements,
- Any vehicles maneuvering around the site must be fully supervised by a banksman, where applicable,
- Public and Northern Lawn Tennis Club areas must be kept in a condition that is suitable and safe to use,
- Adequate safety signs and notices will be displayed indicating the construction area where requested by the Client and suitable measures must be provided to prevent unauthorised access to the construction site,
- All delivery vehicles will use the designated routes and comply with any site restrictions,
- Work will cease if material suspected as being asbestos or hazardous in nature is discovered,
- Provision of appropriate firefighting equipment and establish a safety zone during hot works,
- PPE is to be worn where site rules, risk assessments and method statements specify this,
- No Parking on site unless agreed by the Client,
- No radios or music players,
- A Drugs and alcohol policy to be in place by the Principal Contractor,
- No smoking on site unless in a designated area agreed with the Client,
- The Principal Contractors' own Site Safety Rules will also apply and shall be detailed within their Construction Phase Plan.

3.7. Activities on or Adjacent to the Site During the Works

The location (known as the Northern) has over 20 tennis courts, six squash courts, a well-equipped gym, spacious fitness studio and a comfortable lounge bar and eatery. The existing buildings and facilities within the site will remain in use during the construction works.

The Site Itself is also close to: -

- Metrolink Tram Stop (West Didsbury)
- Retail Premises
- Bars and restaurants
- Didsbury United Reformed Church

All surrounding areas have pedestrian and vehicular traffic at all times. The Contractor is to account for this and shall take responsible steps to protect third parties and property during the construction of the Works and to ensure that no unnecessary disturbance and disruption occurs to adjacent owners or tenants.

The Principal Contractor should note the nature of other buildings which are immediately adjacent to the site or in the immediate vicinity of the site and ensure that access and egress to other properties is unhindered by the works at all times and that his method of working causes the absolute minimum of inconvenience to adjoining owners and the public. This will be important when planning deliveries and waste removal from the site using the Elm Road site entrance and liaison with neighboring residential properties is suggested to ensure access can be maintained for deliveries and waste removal. There will also be a need for consideration of noise, mud and dust issues during the work.

Specific issues will be:

- Site Traffic Management where plans will need to minimise impact on the Clients activities, ongoing site requirements, site access, local residents, businesses and local traffic and pedestrian routes,
- The boundary control measures with any adjacent properties will need specific consideration and may need to be agreed in advance e.g., Resident Parking near Elm Road Site entry point.
- Where required, the Principal Contractor is to liaise with the local council/local authorities for action and include for any necessary diversions or temporary works although this is not currently anticipated.

3.8. Security Arrangements

Particular account is to be taken of the potential for unauthorised persons, children, and young people straying into work areas while construction activities are taking place. Reference should be made to HSG 151:2009 - Protecting the Public - Your Next Move.

Site hoarding or adequate fencing will be required to be erected before the project starts.

The Principal Contractor is to show on a drawing his intended site compound and storage area and the location for receiving deliveries/unloading materials as part of his Proposals, indicating how existing fire escape routes and delivery routes will remain clear at all times.

In order to protect third parties (including potential trespassers) from hazards relating to site demolition and construction activities, a detailed description of security arrangements, including fencing and signage is to be developed and included within the CPHSP. On this project, some tennis court gates may be required to be

locked off to prevent unauthorised or unintended access to the work areas by Users of the Northern Tennis Facilities and this shall be coordinated with the Client.

The site is to remain secure at the end of each working day and over weekend periods. All information relating to site security is to be included and covered during the site induction.

The Principal Contractor is required to comply with all security procedures adopted by the Client. These may include:

- Signing in daily upon arrival and when leaving the site,
- Providing the Client with adequate notice of the need to undertake any out of hours working,
- Not leaving unattended packages outside the demise of the construction site,
- Operatives should not enter areas which are outside of the construction site unless agreed with the Client,
- Operatives must ensure that plant and equipment is secured at the end of each shift and no key are left in mobile plant,
- All flammable substances, paints, flammable liquids or gases must be secured by the PC at the end of each shift.

Third party properties adjacent to the site, within close proximity will require specific consideration when compiling the CPHSP. The Principal Contractor will ensure that there are no restrictions from the local authority and that any necessary permits or restrictions are dealt with prior to works commencing.

3.9. Welfare Facilities

The Client has agreed that toilets and welfare facilities can be made available on site e.g., toilets are available within the existing indoor court. The Principal Contractor is to ensure all provided facilities remain clean and tidy. The welfare facilities for the site must comply with schedule 2 of the Construction (Design and Management) Regulations 2015. They are required to be provided throughout the construction phase and confirmed within the Construction Phase Plan.

The minimum standard that will be required on site from the start of the project is:

- Hot and cold running water
- Flushing toilets for male and female use with washing facilities for face, hands, and forearms
- Area for canteen and drying area for the number of workers on site
- Wholesome drinking water

3.10. Traffic Management

The agreed access to the site will be via the Elm Road entrance to the Northern Lawn Tennis Club. An important factor will be liaison with the neighboring properties to ensure minimal disruption during the works and maintaining access for site vehicles at key points during the project.



Site Entrance for Works at Elm Road (Note local car parking within vicinity of site entrance).



Access point (Note local use for car parking)

The Principal Contractors Traffic Management arrangements must be site specific and follow the HSE Guidance (HSG136 Workplace Transport Safety, HSG144 the Safe Use of Vehicles on Construction Sites and INDG148 Reversing Vehicles). Such considerations shall include, traffic routes, type of roads, bus routes, schools/colleges/leisure centres, site access, delivery times, any restricted parking, arrangements for delivered and / or collections (including waste), overhead cables around and across the site, segregation of site traffic and pedestrians, including on site activity.

Where required, the Principal Contractor is to ascertain and if necessary, arrange with the Local Authority acceptable safe access routes to and from the site including paying any costs and charges in relation to temporary one-way systems, suspension of parking bays and road closures during the course of the contract.

Traffic management will need to also minimise impact on the Clients activities to maintain uninterrupted services, local residents and local traffic and pedestrian routes.

Deliveries/removals from site will need to avoid busy periods unless prior consent has been agreed with the Client.

4. Environmental Restrictions and Existing On-Site Risks

4.1. Safety Hazards

4.1.1. Boundaries and Access

The Principal Contractor shall familiarise themselves with the access restrictions applicable to this site and make all required allowances to minimise hazards and risks to others when planning their works at this location. The Principal Contractor shall be deemed to have agreed his access routes and parking arrangements with the Contract Administrator/Client prior to works commencing on site.

4.1.2. Restrictions on Deliveries or Waste Collection or Storage

Materials storage will be limited within the site and the scheduling of deliveries and waste removals may be necessary. See section 3.10. There may be the need for road cleaning / wheel washing measures at the agreed site entrance on Elm Road due to the nature of the works.

4.1.3. Adjacent Land Uses

The Contractor should note the nature of other buildings which are immediately adjacent to the site or in the immediate vicinity of the site and ensure that access and egress to other properties is unhindered by the works at all times and that his method of working causes the absolute minimum of inconvenience to adjoining owners and the public. The existing buildings adjacent to the site will remain in occupation during the construction works. There will also be a need for consideration of noise and dust issues during the works.

4.1.4. Existing Storage of Hazardous Materials

There is not believed to be any storage of hazardous materials within the proposed working areas.

4.1.5. Location of Existing Services

The property is served by gas, water, electricity, telecoms and drainage and although existing drainage information is available, it is understood that there may be limited electrical or other service drawings available for the site.

It is essential that, before any excavation or sub-level work commences, all underground services are identified and considered. Services may include electricity cables, drains, water pipes and gas. The Principal Contractor must determine the nature of these services, their position, and necessary controls to safeguard / isolate them prior to any excavating work.

The possible sourcing of existing site plans, manhole positions, junction boxes, use of cable locators and local information will assist in this process.

All excavation work shall be undertaken in accordance with the principles set out in HSE Guidance Note HS (G) 47 "Avoiding Danger from Underground Services".

4.1.6. Ground Conditions

Please refer to **Appendix 2** Design Information.

4.1.7. Existing Structures

The neighboring buildings/structures will be occupied during the works and control measures will be required and included in the Construction Phase Plan.

4.1.8. Temporary Works and False Works

Due to the nature of works, this will be unlikely however where applicable, the Principal Contractor is to ensure that a competent Temporary Works Coordinator is appointed for all temporary works and false works on the project and that the Principal Designer is informed who the Temporary Works Coordinator is and kept in communication on temporary works design risk matters.

Temporary works procedures

Contractors should be able to demonstrate that they have in place effective arrangements for controlling risks arising from the use of temporary works. These are usually captured in a temporary works procedure which will contain most or all of the following elements:

- Appointment of Temporary Works Coordinator
- Preparation of an adequate design brief
- Completion and maintenance of a temporary works register
- Production of a temporary works design including a design risk assessment and a designer's method statement where appropriate
- Independent checking of the temporary works design
- Issue of a design/design check certificate, if appropriate
- Pre-erection inspection of the temporary works materials and components

Throughout all stages of the project the PC must assess the requirements for all Temporary Works. Such works should be designed, checked, installed, inspected and removed by a competent person to ensure their structural integrity and safety in use.

Note: The PC must adequately manage all Temporary Works on site throughout the duration of the Construction Works. A statement describing the procedures he will employ to achieve this, in particular with respect to:

- Appraisal of Temporary Works
- Compliance with the Construction (Design and Management) Regulations 2015
- Erection/Installation of Temporary Works
- Inspection of Temporary Works
- Removal of Temporary Works

Details of all Temporary Works Design/s must be forwarded to the relevant Engineer and PD for review prior to undertaking the works.

4.1.9. Previous Structural Modifications

NA

4.1.10. Fire Damage, Ground Shrinkage, Movement or Poor Maintenance

Please Refer to full Tender Document Pack for the most recent information/documents/reports for this project.

4.1.11. Difficulties Relating to Plant and Equipment in the Premises

The construction phase plan will need to identify any difficulties with the use or delivery of work equipment relative to this project and include all relevant control measures.

4.1.12. Previous Health and Safety Information

Please Refer to full Tender Document Pack for the most recent information/documents/reports for this scheme.

4.2. Health Hazards

4.2.1. Asbestos

Not anticipated however the Principal Contractor should have in place control measures for uncovering unidentified materials during their works. These control measures should be included in the Construction Phase Health & Safety Plan.

4.2.2. Existing Storage of Hazardous Materials

None identified.

4.2.3. Contaminated land

None currently highlighted however please see Appendix B for all available drawings/information noting the following in relation to Ground Conditions:

- 100942 - Phase 1 & 2 - Northern Lawn
- 100942 Infiltration & DCP Report

4.2.4. Existing Structures Hazardous Materials

Refer to 4.1.7. above.

4.2.5. Health Risks Arising from Client's Activities

None identified at this stage.

4.2.6. Control of Noise and Vibration

Noise and vibration will need to be minimised through best practice and good management in order to minimise the noise to sensitive neighbors, residential, retail and public receivers in the vicinity. Regular liaison may need to be held with the project team and adjacent building occupants.

Plant and equipment may need to be fitted working exhaust mufflers and noise suppression kits.

4.2.7. Control of Dust

Where relevant, dust must be controlled mainly through the use of controlled cutting, damping down with a fine mist of water and dust suppressant tools where necessary during the construction phase.

4.2.8. Waste Management

In accordance with environmental legislation, all waste generated from the works shall be, where practicable, segregated and disposed of to a licensed tipping facility utilising registered and licensed waste disposal contractors.

In the case of any hazardous waste, all products shall be removed and disposed of in accordance with relevant local enforcing bodies.

All licenses obtained and transfer notes shall be retained as proof of correct disposal. Arrangements for storing, removing and the location of skips are to be included within the construction phase plan.

The Principal Contractor shall ensure, so far as is reasonably practicable, that site deliveries and collections are scheduled at suitable times during the day so as to avoid anti-social hours, school rush hours, work rush hours and local organised events where the volume of local traffic may increase.

5. Significant Design and Construction Hazards

5.1. Design Assumptions and Suggested Works Method, Sequences or Control Measures

5.1.1. Design

The Principal Contractor, where applicable, shall take note of information provided by all designers and develop safe systems of working.

Risk assessments and method statements supplied by contractors / specialist shall be incorporated within the construction phase plan prior to executing any high risk / hazardous operation and copied to the Principal Designer for review prior to commencing these activities on site.

5.1.2. Other Design

For detailed proposed layout, specifications, technical detail and drawings please refer to the documents in the tender package.

5.2. Arrangements for Co-ordination of On-going Design Work and Handling Design Changes

In order to monitor this situation and to demonstrate co-operation between designers, we require feedback from the Principal Contractor on a regular basis.

We consider that an effective way for designers to record design health and safety review and development is in the minutes of any design team meetings:

- a) All matters affecting design, which you or your fellow designers anticipate may result in health and safety risks that would not be obvious to a competent contractor.
- b) Design criteria which has health and safety implications for future maintenance cleaning or demolition.
- c) Design alterations and control measures envisaged in order to eliminate, minimise and/or control health and safety risks and hazards.
- d) All matters affecting the design in respect of all temporary works and false work and that BS 5975:2008 is being complied with.
- e) Significant changes to the details included of the Health and Safety Executive notification.

The minutes of any design meetings will then act as a record of the action towards fulfilling the requirements of the Construction (Design and Management) Regulations 2015.

If due to unforeseen circumstances there are aspects of the design which require modification post tender, the following procedure/s shall apply:

As soon as it becomes known that a design element is to be modified and this modification may have a health and safety impact, the Principal Designer is to be notified;

The Principal Designer may check that whoever is instructing the Design Team has ensured provision of all necessary information to enable the design to consider other works, and other design elements in selecting the most appropriate options when modifying the design;

Each modification shall be developed on the basis of risk prevention regarding execution, construction and maintenance.

If required, the Principal Designer shall be provided with evidence of the risk prevention principles.

5.3. Information on Significant Risks Identified During Design (health and safety risks)

The Principal Contractor shall address the following significant risks associated with the project. It is essential that the construction phase plan details the management arrangements to address the issues related below in the form of safe systems of work before the work commences on site.

Summary of significant risks:

- Deliveries to and Waste removal from the site
- Work affecting escape routes and fire detection/warning systems,
- Excavation works,
- Live services including gas, electricity (overhead and underground) and water,
- Work to existing services; drainage; electricity and gas; water; surface mounted services etc,
- Work arrangements affecting those working, visiting, delivering to the premises,
- Fire or uncontrolled release of dangerous substances within the site,
- Manual handling / heavy lifts / handling of materials and equipment,
- Hot works,
- Working at heights / use of MEWPS,
- Lifting Operations / Use of Telehandler,
- Falling objects,
- Asbestos / hidden asbestos within fabric of buildings, plant or grounds,
- Mechanical and electrical hazards within plant rooms,
- Heavy plant and equipment,
- Hazardous substances,
- Working in the vicinity of biological hazards, possibility of discarded/hidden needles; bodily fluids
- Noise,

The following Risk have been Identified,

- Potential for unidentified services,
- Plant and Heavy Vehicles entry onto site and circulation within site,
- lifting operations relating to Padel Court & Canopy Frame assembly on site, lighting columns,
- Working at height e.g., Padel Canopy Roof Covering,
- Handling large glass sections,
- Segregating works from Club Users,
- Maintaining existing fire exits from adjacent building.

All other residual design risks are considered to be those that are commonplace in construction work and are reasonably recognised by competent contractors.

All Designers have a duty to ensure that so far as is reasonably practicable (SFARP) they eliminate if not reduce the risks to those constructing, demolishing, maintaining, using a structure and its associated plant and those others affected by their designs.

Designers are expected to utilise best practice including Design Safety Guidance such as that produced by CIRIA and the Construction Industry Council.

Designers should always provide philosophy for the elements for which they are responsible.

All Designers appointed by the Client or the Principal Contractor must be able to demonstrate that they have design safety procedures in place including;

- Hazard Identification
- Design Review
- Provision of Residual Risk Information as part of their competency assessment
- Procedures to ensure that those they appoint have equivalent procedures in place

Design Safety Management throughout this project is to be achieved by means of:

- Design Risk Assessments: Will be provided by the design team when designs are proposed and/or when changes to design result in any new hazards being identified or new levels of risk (higher or lower) associated to the design identified.
- Project Maintenance Strategies: Included in the above and at project completion added to the Health and Safety File in the appropriate format.
- Design Reviews: Undertaken during the project as required.
- Project Directory and Responsibilities: This document will be updated as required.
- The development and management of a Project CDM Register by the Principal Designer to record all design elements where risk has been designed out, minimised or mitigated.

5.4. Materials Requiring Particular Precautions

No materials have been identified that require any particular precautions, other than the control measures instructed on the materials data sheets and within the RAMS supplied by Padel Tech.

6. The Health and Safety File

6.1. Format

This should include:

- Identifying the type of format
- Describing how the file will relate to any Building Manuals and O&M Manuals that may be provided
- Stating how many copies will be required and to whom they are to be issued

6.2. Content

An example of the content is as follows:

- 1 Introduction
- 2 Brief description of the project
- 3 Residual hazards
- 4 Design criteria
- 5 List of materials with any associated hazards
- 6 Information regarding the removal or dismantling of installed plant or equipment
- 7 Maintenance and cleaning procedures for the structure
- 8 Nature, location and markings of significant services, including firefighting services
- 9 As built drawings of the structure
- 10 Operating and maintenance manual and national building specification

Relevant appendices

6.3. Contributors and Co-ordination of Contributions

PC	Responsibility for compilation and assembly of the file
PC	Responsibility for contributions to each section of the file
PC	Responsibility for co-ordinating and chasing contributors
PD	Responsibility for reviewing the file to establish satisfactory completion
PC/PD	Responsibility for delivering the file to the client

6.4. Programme for Development and Completion of the Health and Safety File

Initiate the file binders with contents sheets and action lists for contributors	From contract award
Monitor contributions to the file throughout construction	Record progress at site meetings
Complete the file ready for review to establish satisfactory completion	two weeks before practical completion
Reviewers response to the file	one week from receipt
Complete and issue the Health and Safety File to the client	To be issued at practical completion.



Appendices

APPENDIX A Site Location Map / Details

APPENDIX B Design Drawings / Site Information

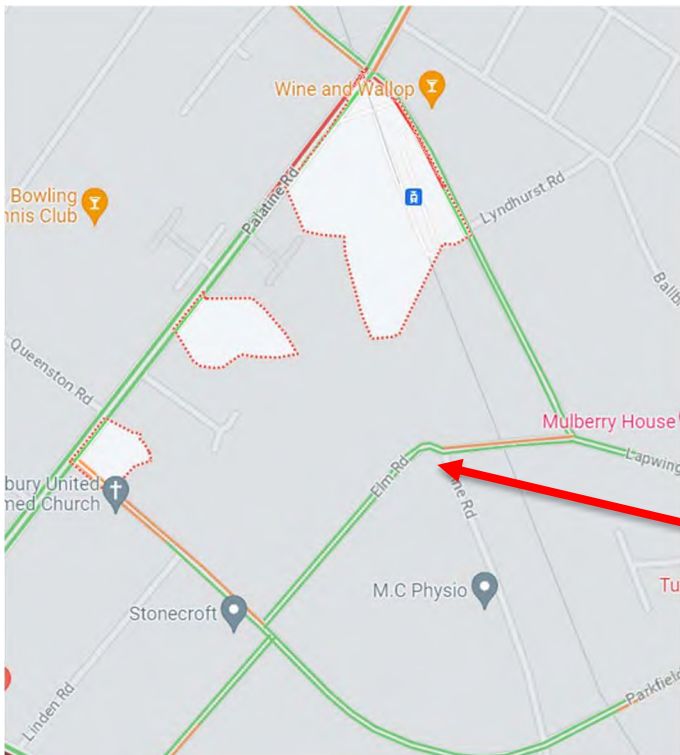
APPENDIX C F10 Notification

APPENDIX D Example RAMS (Padel Tech)

Site Location Details

Northern Lawn Tennis Club
The Northern Palatine Road
West Didsbury
Manchester
M20 3YA

Site Entrance to be via Elm Road



Access to Site via Elm
Road



Gate

Public Transport

Tram stop: West Disbury

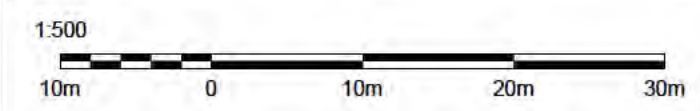
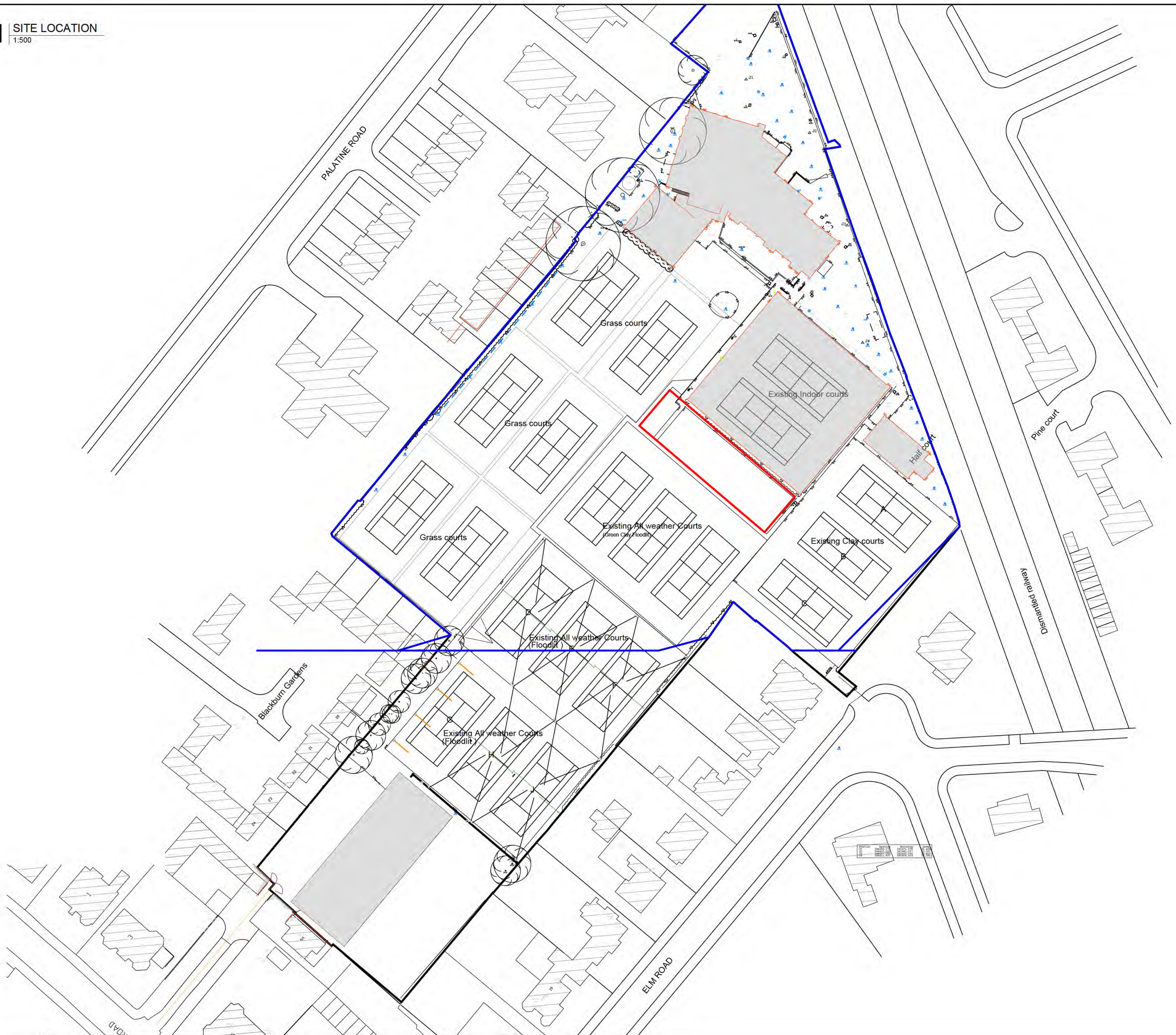
Closest bus stops: West

Didsbury Metrolink (Stop A or
B), Central Road (Stop C or
D)

Location map



01 SITE LOCATION
1:500



KEY

- Land ownership boundary
- Application site boundary

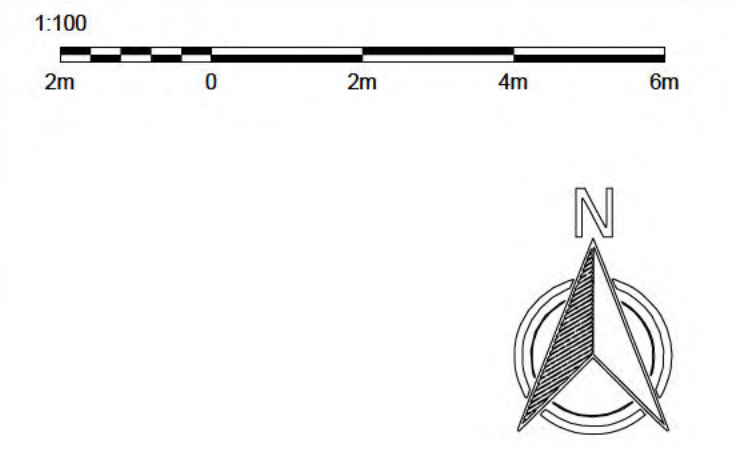
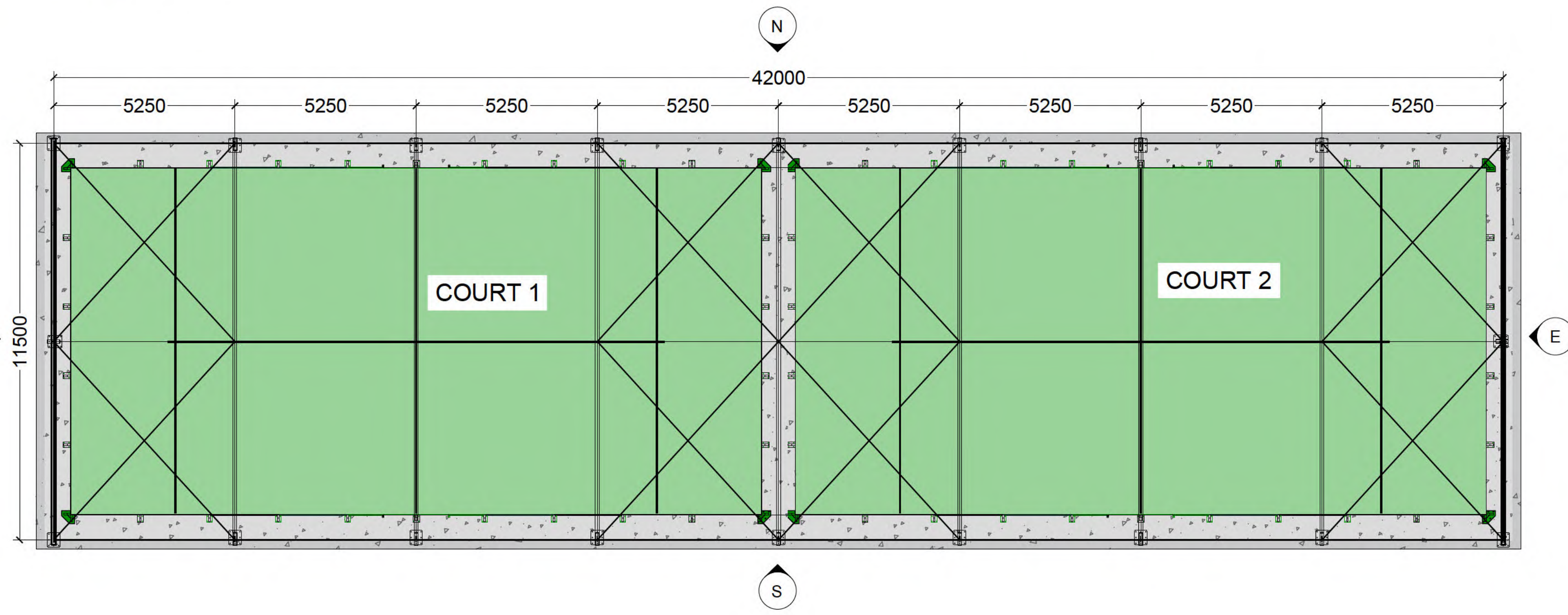
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SITE	The Northern LTC		
TITLE	LOCATION PLAN		
SCALE	1:500 @A1	DATE	19.11.21
PROJECT No.	2011-04	DRAWING No.	001
		CHECKED	AP
		REVISION	A



01 SITE PLAN
1:500



02 COURTS PLAN
1:100



KEY

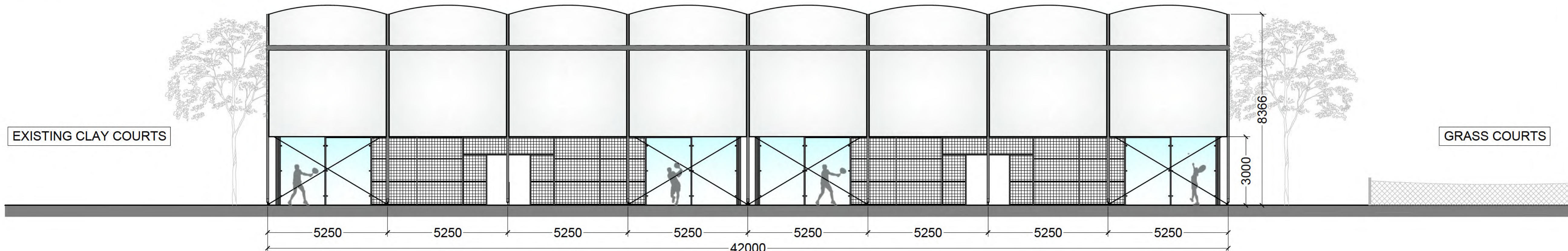
- Application site boundary
- Land ownership boundary
- Courts carpet
- Concrete foundation

NOTES

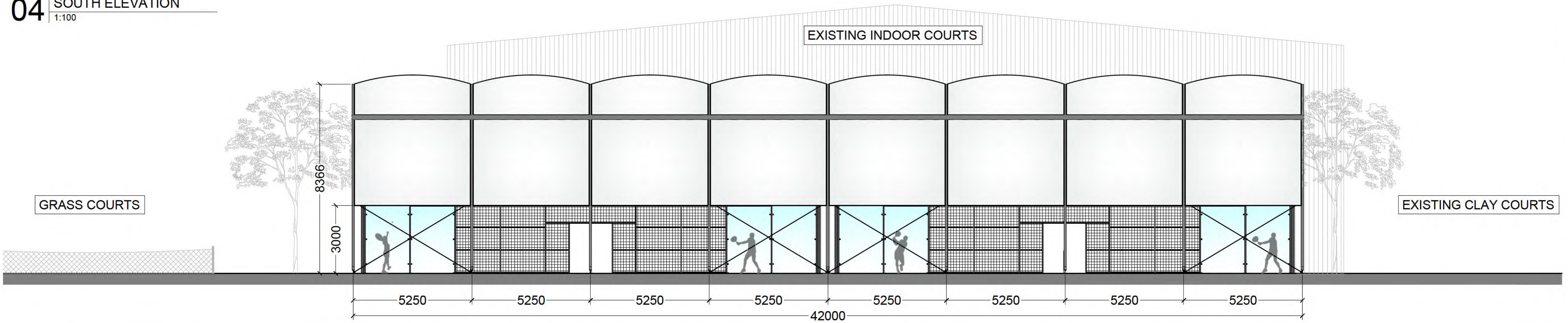
Canopy based on:
Okatent Single Padel Topspin 5.2

Padel court based on:
AFP Aluminium posted court

03 NORTH ELEVATION
1:100



04 SOUTH ELEVATION
1:100

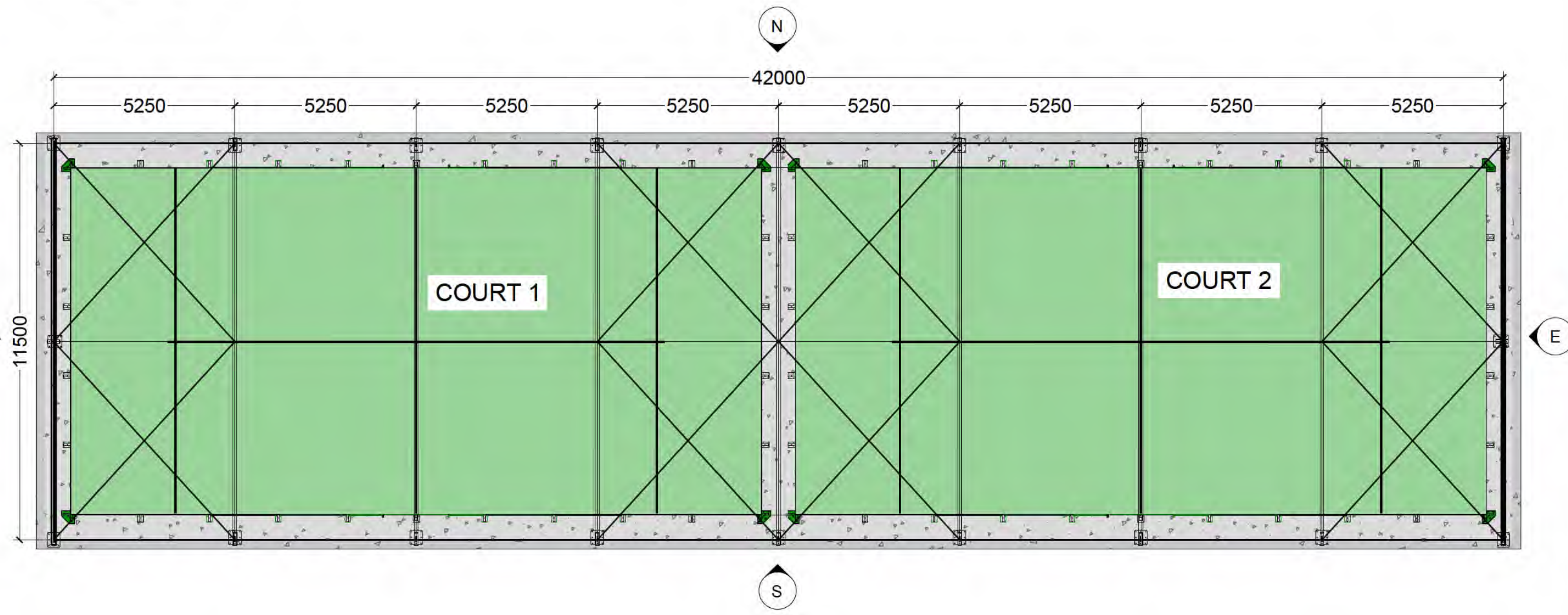


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SITE	The Northern LTC		
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PROJECT NO	2011-04	DRAWING NO	003
REVISION		REVISION	A

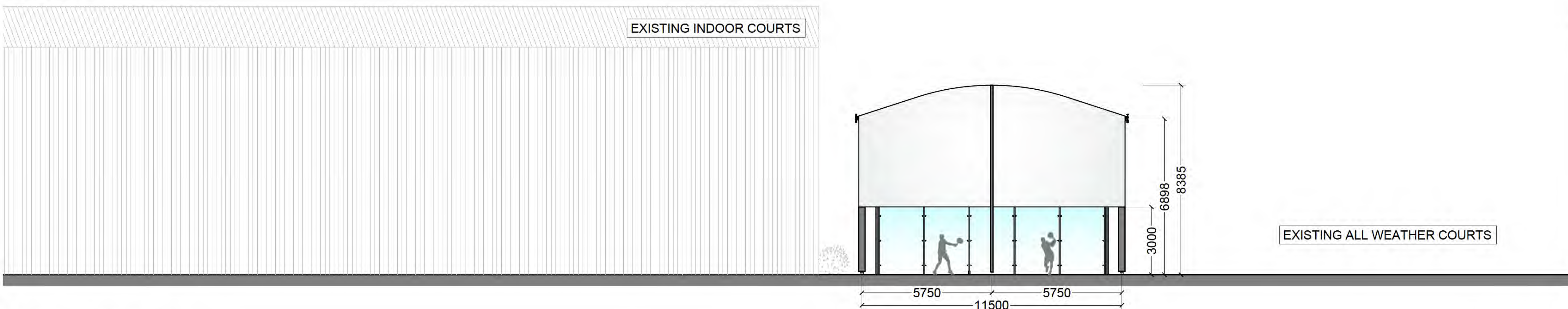
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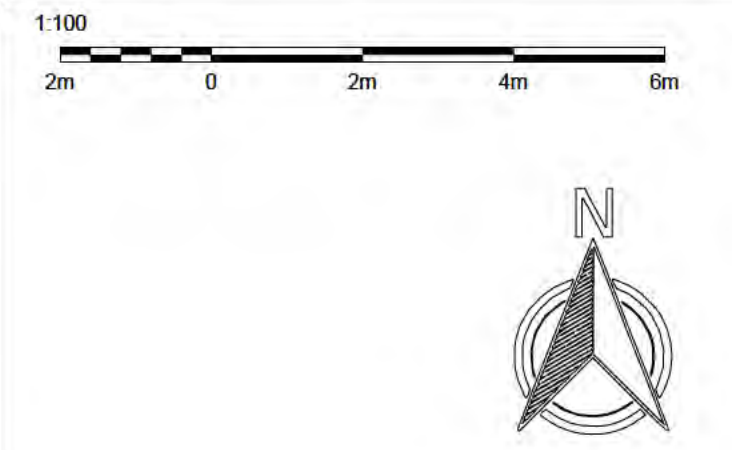
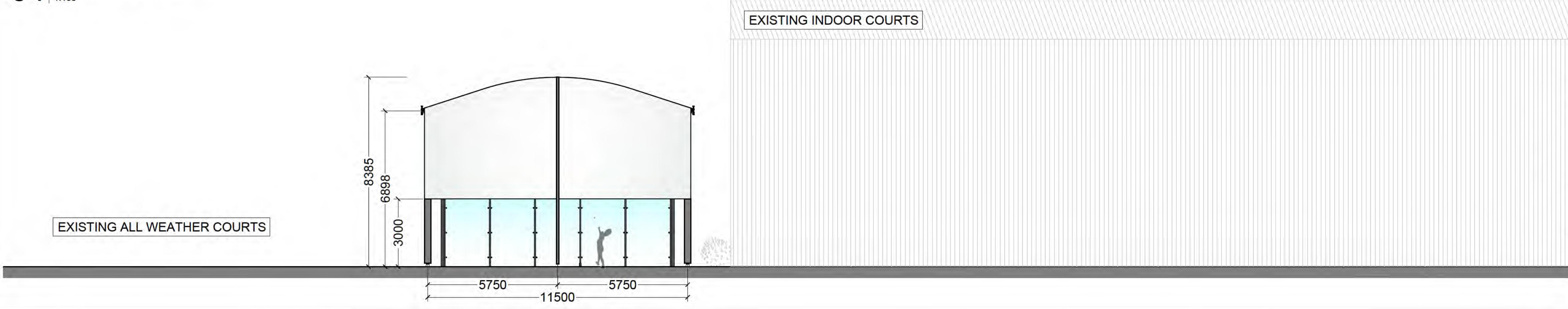
02 COURTS PLAN
1:100



03 EAST ELEVATION
1:100



04 WEST ELEVATION
1:100



- KEY**
- Application site boundary
 - Land ownership boundary
 - Courts carpet
 - Concrete foundation

NOTES

Canopy based on:
Okatent Single Padel Topspin 5.2

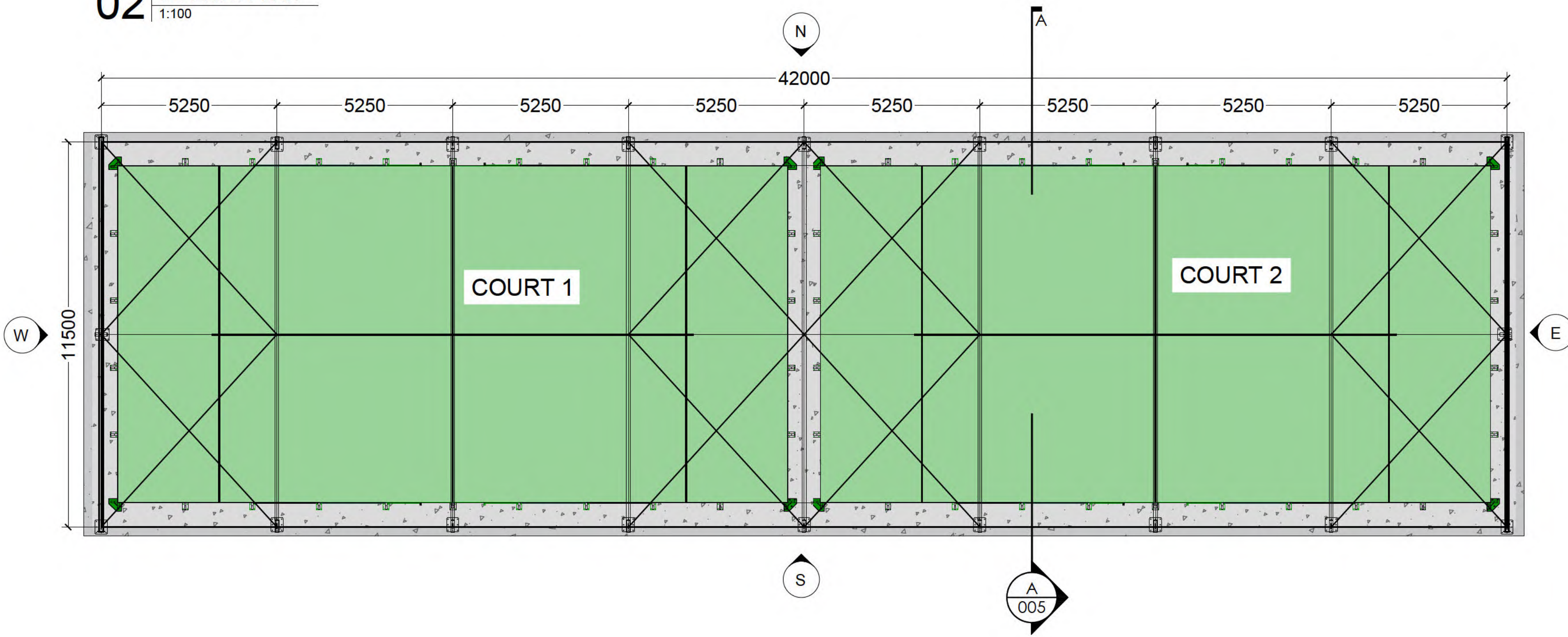
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AFP Aluminium posted court

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SITE: The Northern LTC			
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PROJECT No: 2011-04	DRAWINGS No: 004	REVISION: A	

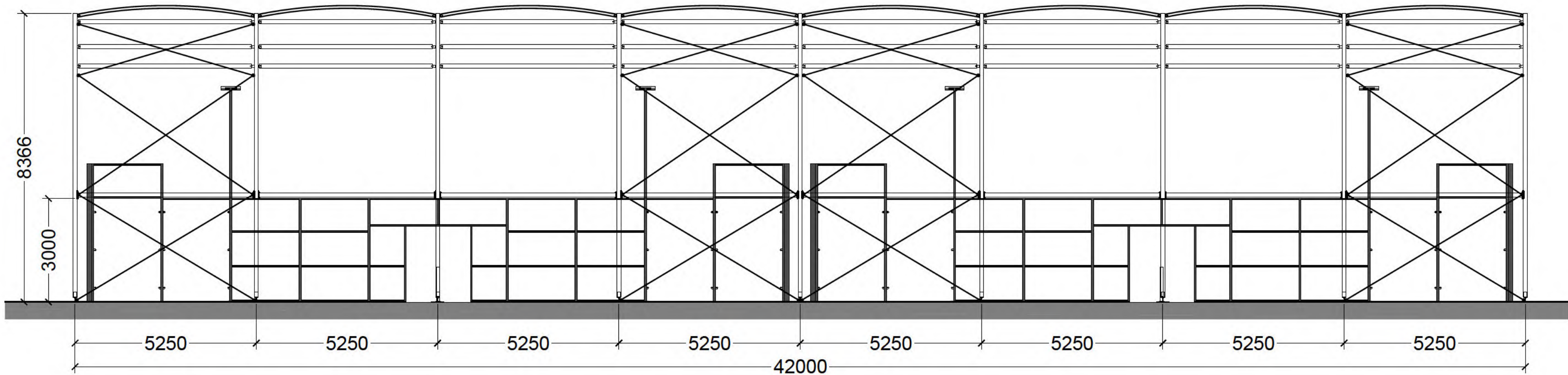
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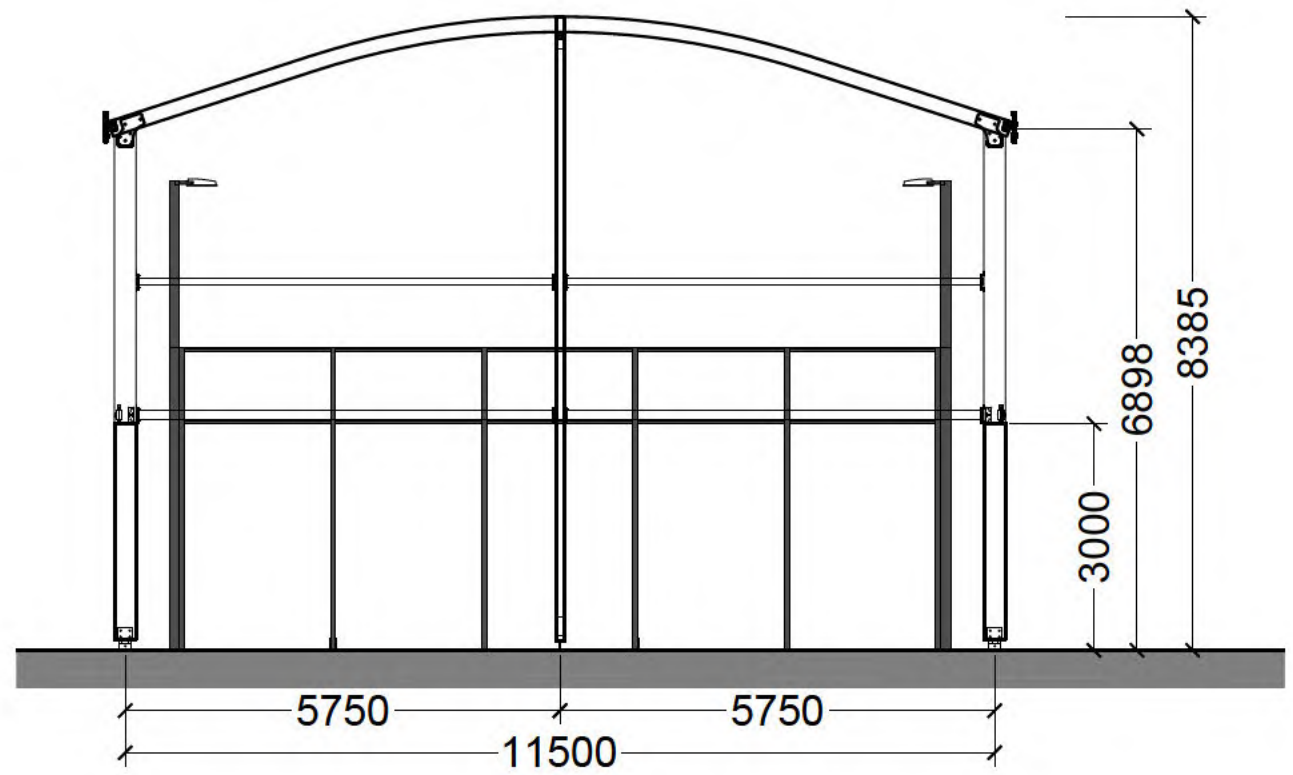
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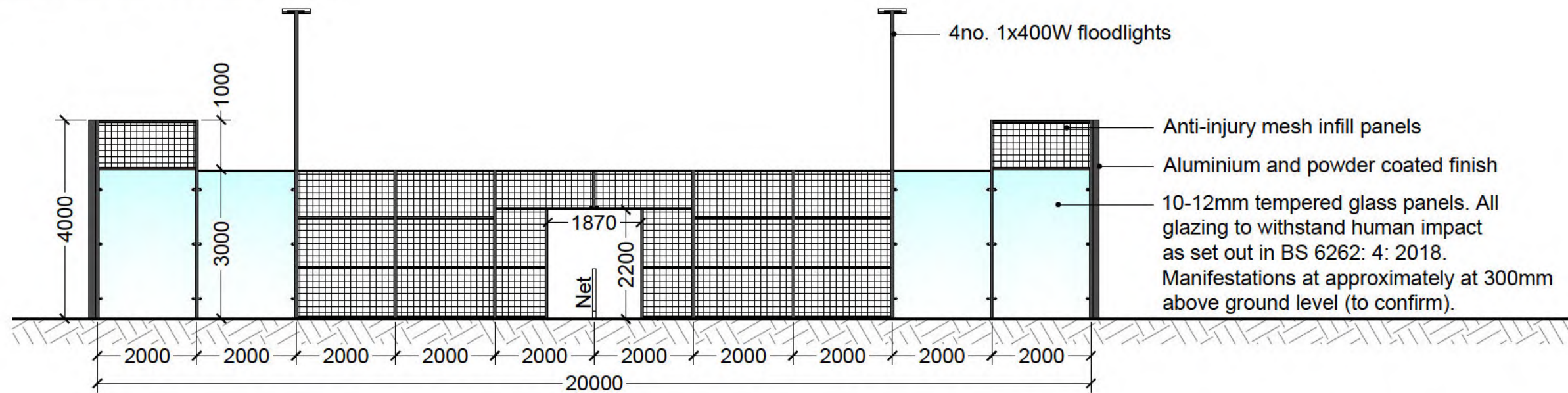
03 SIDE ELEVATION WITHOUT CLADDING
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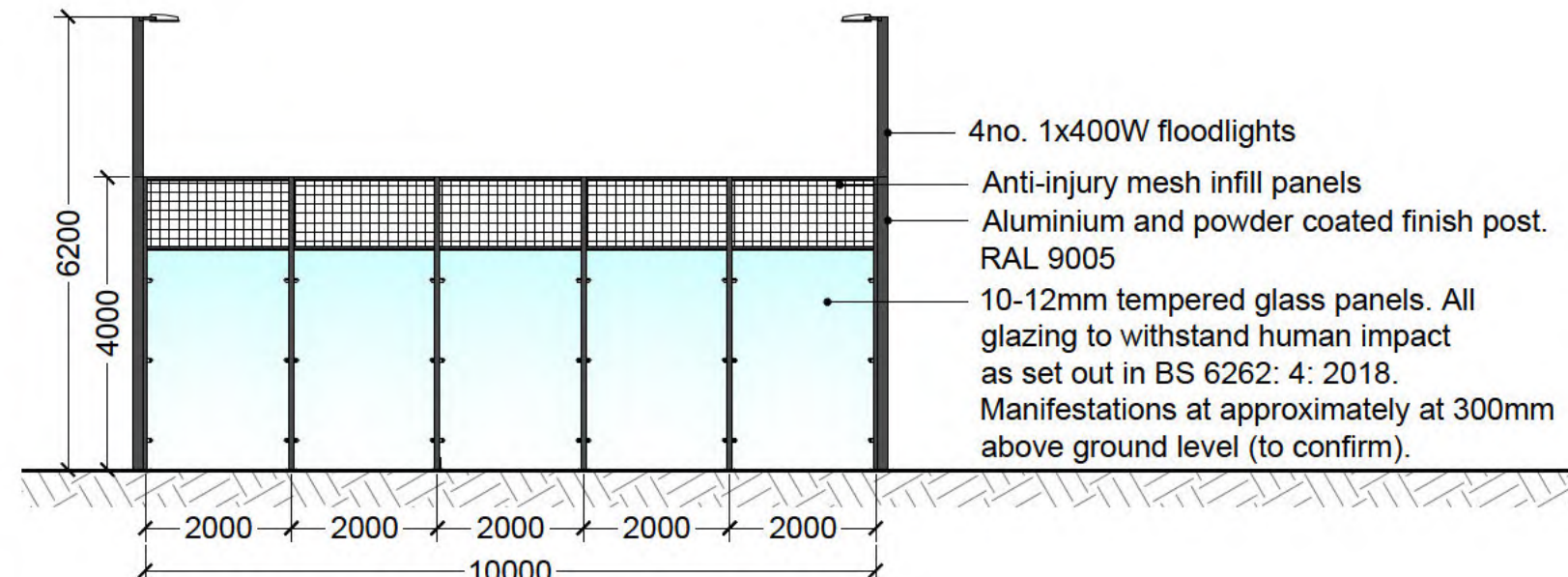
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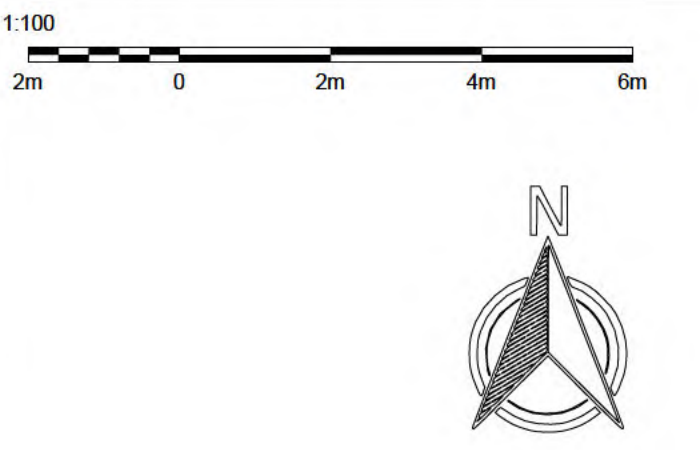
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06 END COURT SPECIFICATION
1:100



07 COURT 3D RENDER
NTS



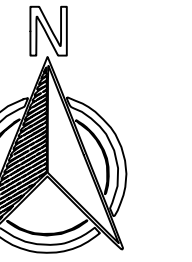
- KEY**
- Application site boundary
 - Courts carpet
 - Courts carpet
 - Concrete foundation

NOTES

Canopy based on:
Okatent Single Padel Topspin 5.2

Padel court based on:
AFP Aluminium posted court

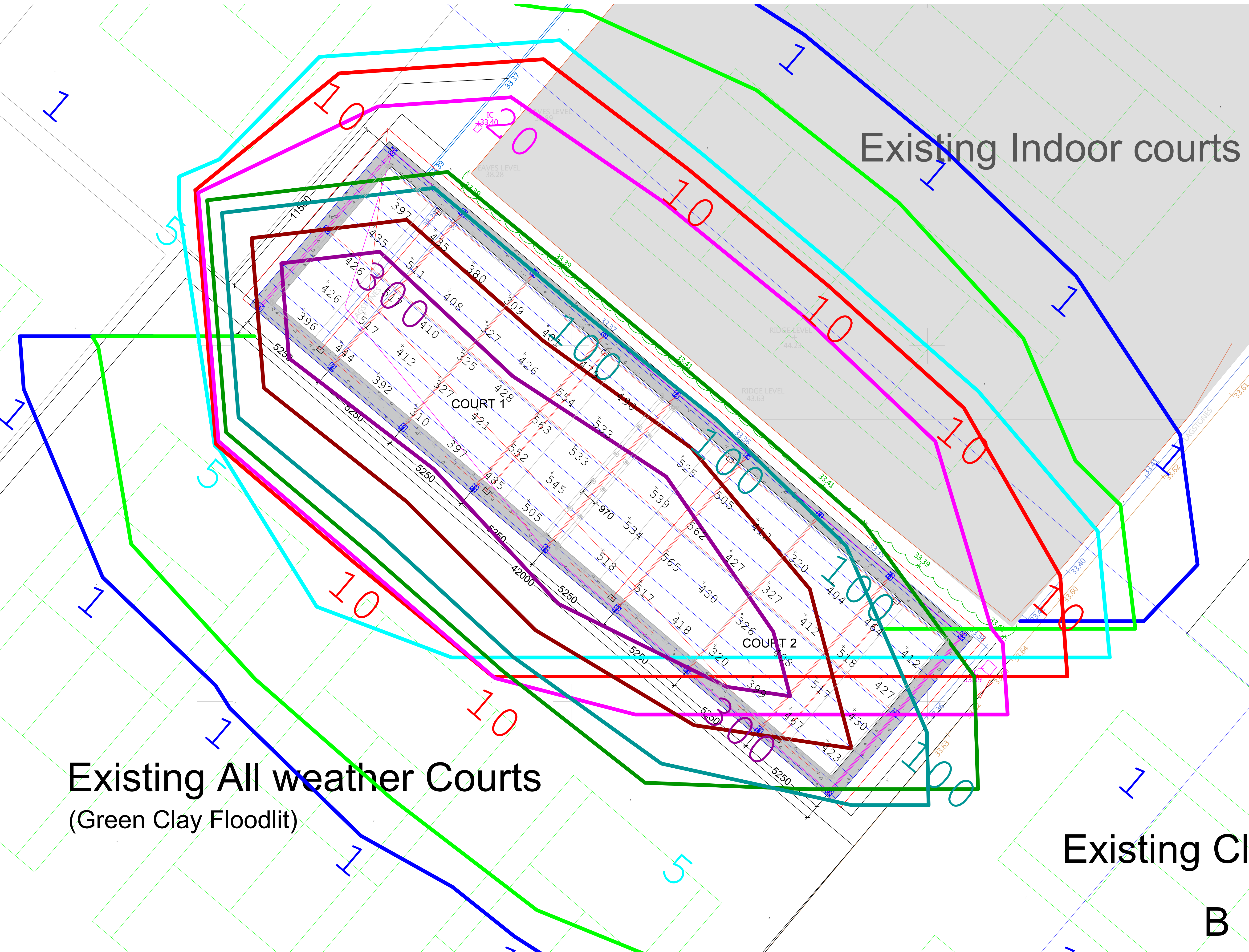
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PROJECT No: 2011-04	DRAWINGS No: 005	REVISION: D	



NOTES

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Padel court based on:
AFP Aluminium posted court



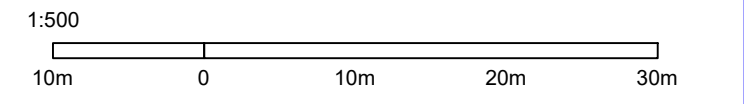
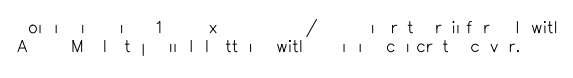
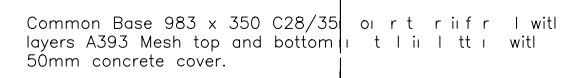
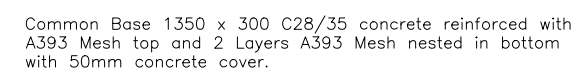
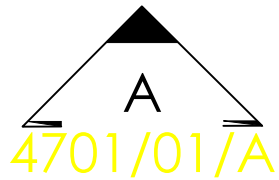
Existing All weather Courts
(Green Clay Floodlit)

Existing Clay Courts

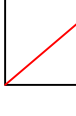
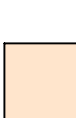
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SITE:	The Northern LTC		
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SCALE	DATE:	DRAWN:	CHECKED:
1:100 @A1	08.09.22	LS	AP
PROJECT No:	DRAWING No:	REVISION:	
2011-04	006	E	

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+44(0)131 581 8683
Southern office
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Warwick, CV34 6RG
+44(0)1926 679 586



KEY

- | | |
|---|---------------------------|
|  | Land ownership boundary |
|  | Application site boundary |
|  | Buildings |
|  | Pedestrian paving |
|  | Path |
|  | Vehicular paving |
|  | Dense vegetation |
|  | Lawn |
|  | Sport facility |
|  | Water |
|  | Trees |

-	-	-	-
REV:	DESCRIPTION:	BY:	DATE:
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NLTC			
SITE:			
Padel Court and Canopy			
TITLE:			
DRAFT FOUNDATION			
SCALE	DATE:	DRAWN:	CHECKED:
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PROJECT No:	DRAWING No:		REVISION:
22011-04	008		A

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SW12 9PZ
Tel: 0203 475 2280

Manchester office

105 Manchester Road
Bury
BL9 0TD
Tel: 0161 850 2280

THE NORTHERN, WEST DIDSBURY, MANCHESTER

NOISE IMPACT ASSESSMENT: PROPOSED TENNIS COURTS

Report **16764-NIA-03 RevC**

Prepared on 29 November 2022

Issued For:
Northern Lawn Tennis Club Limited
Palatine Road
West Didsbury
Manchester
M20 3YA



Executive Summary

This noise impact assessment has been undertaken in order to assess use of proposed all-weather tennis courts at The Northern, West Didsbury, Manchester

The proposed development comprises three additional all-weather tennis courts, to be installed adjacent to existing all-weather tennis courts.

Attended noise measurements have been undertaken of the existing tennis courts at The Northern, West Didsbury, Manchester, in order to determine the noise levels currently experienced due to noise from typical tennis courts. The levels have been used to inform the level of noise anticipated from the proposed new courts.

Calculations were undertaken using the proprietary noise modelling software package CadnaA for the nearest identified receivers. It should be noted that if there are closer receivers than those assessed in this report, a reassessment will be necessary, and this should therefore be confirmed by the Client.

It has been demonstrated that compliance with the established criterion is expected, dependant on the current proposed layouts, the anticipated nature of usage, and assumptions regarding boundary treatments including the proposed introduction of screening to residential gardens on Elm Road.

If there is any deviation from the above, Clement Acoustics must be informed, in order to establish whether a reassessment is necessary.

Clement Acoustics has used all reasonable skill and professional judgement when preparing this report. The report relies on the information as provided to us at the time of writing and the assumptions as made in our assessment.

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List of Attachments

16764-NIA-03-SP1	Indicative Site Plan
Appendix A	Glossary of Acoustic Terminology
Appendix B	Raw Measurement Data
Appendix C	Calibration Certificates

Document Revision	Date of Revision	Reasons for Revision	Revision By
0	15/08/2022	First Issue	Duncan Martin MIOA
RevA	26/10/2022	Amended boundary treatments to include proposed screening	Duncan Martin MIOA
RevB	17/11/2022	Amended barrier location	Duncan Martin MIOA
RevC	29/11/2022	Cumulative assessment updated	Duncan Martin MIOA

1.0 INTRODUCTION

Clement Acoustics has been commissioned by Northern Lawn Tennis Club Limited to undertake an assessment of proposed additional all-weather tennis courts at the existing tennis club. Measured noise levels have been used to determine the expected noise impact of a proposed development of additional all-weather tennis courts, in agreement with the planning requirements of the Manchester City Council.

This report presents the results of onsite noise measurements followed by noise impact calculations and outlines any necessary mitigation measures.

An acoustic terminology glossary is provided in Appendix A.

2.0 SITE DESCRIPTION

The existing area of the Northern Lawn Tennis Club undergoing development, currently consists of a grass court area and intermediate grass areas.

Current proposals are to develop the site to provide three additional all-weather tennis courts in the location shown in Figure 2.1. A separate application has also been made two covered Padel courts in an adjacent location, also shown in Figure 2.1.

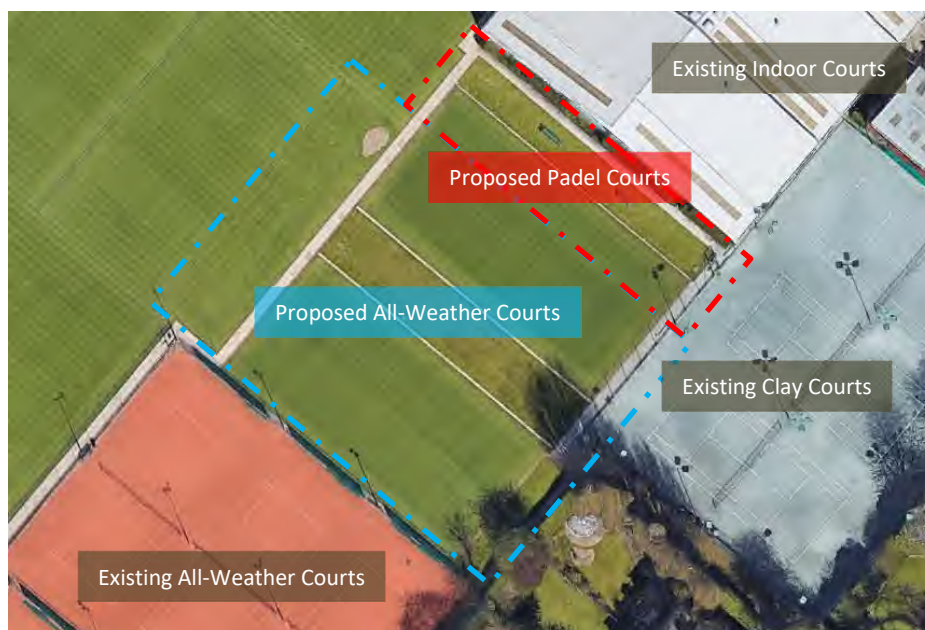


Figure 2.1: Aerial view of existing site showing development location

It should be noted that, although this report addresses only the proposed all-weather tennis courts in detail, a cumulative assessment of the Padel and proposed all-weather pitches in combination is also provided.

The gardens and facades of residential houses on Elm Road have been identified as the nearest affected residential receivers. These nearest noise sensitive receivers were identified through site plans and on-site observations. If there are any receivers closer to that identified within this report then a further assessment will need to be carried out. Therefore, the closest noise sensitive receivers should be confirmed by the client before any work begins.

Locations are shown in attached site plan 16764-NIA-03-SP1.

3.0 ONSITE MEASUREMENTS

3.1 Attended Measurements of Tennis Activity

Attended noise measurements of tennis games were undertaken on the existing tennis courts at The Northern Lawn Tennis Club, to provide an understanding of the prevailing noise environment. The choice of these positions was based both on accessibility and on collecting representative noise data in relation to the identified significant noise sources.

Three two-minute measurements were undertaken for the duration of the survey between 13:30 on and 14:15 on 27 May 2021.

At the time of the measurements, the ambient noise profile was largely dominated by noise due to activities taking place on the tennis courts.

The noise levels measured at the monitoring position were considered suitably representative of noise from the tennis courts only, being away from any railway lines and surrounding roads.

The sound level meters were mounted approximately 1.5 m above ground level under free-field conditions at the locations described in Table 3.1.

Position No.	Description
1	The sound level meter was located at a distance of approximately 1 m from the edge of the net during a singles game. ^[1]
2	The sound level meter was located at a distance of approximately 1 m from the edge of the net during a singles game. ^[1]
3	The sound level meter was located at a distance of approximately 3.5 m the court boundary fence during three simultaneous singles and doubles matches. ^[1]

Table 3.1: Description of attended monitoring locations

Note [1]: The position was considered to be free-field according to guidance found in BS 4142: 2014, and a correction for reflections has therefore not been applied.

Measurement locations are shown in attached site plan 16764-NIA-03-SP1.

3.2 Weather Conditions

At the time of the attended measurements, the weather conditions were dry with very low winds.

It is considered that the weather conditions did not significantly adversely affect the measurements and are therefore considered suitable for the measurement of environmental noise.

3.3 Equipment

The equipment calibration was verified, by means of a field verification check, before and after use and no abnormalities were observed.

The equipment used was as follows.

- 1 No. Norsonic Nor 145 Class 1 Sound Level Meter
- Norsonic Type 1251 Class 1 Calibrator

4.0 RESULTS

4.1 Attended Noise Measurement Results

Table 4.1 presents the results of the measurements carried out at the attended positions described in Section 3.1 above. For each measurement position, the $L_{Aeq,1\text{ sec}}$ noise level has been obtained, and the highest ambient noise level for the whole period has been derived from these values.

Position	Duration	Distance	Max $L_{eq,T}$	Noise Source Description
1	2 min	1 m	52 dB(A)	Consistent noise of ball being hit and bouncing, with occasional talking and shouting conversation.
2	2 min	1 m	60 dB(A)	
3	2 min	3.5 m	53 dB(A)	

Table 4.1: On-site measured noise levels

5.0 NOISE CRITERIA

5.1 Local Authority Policy

The Manchester City Council document ‘Planning and Noise – Technical Guidance’, issued in October 2022 details appropriate criteria to be used for different types of noise source.

The proposed noise source of Tennis Courts is best categorised by ‘Other potentially noisy activities’, which includes Multi-Use Games Areas [MUGAs], sports stadia and gymnasias.

The guidance for these types of noise sources is as follows:

“[These] types of development proposals or applications may have additional specific guidance published to review noise impacts or may otherwise be a potential source of noise.”

A review has therefore been undertaken of possible applicable guidance in order to determine suitable criteria for noise emissions.

5.2 British Standard 4142

British Standard 4142:2014 +A1:2019 ‘Methods for rating and assessing industrial and commercial sound’ [BS 4142] is typically used to provide an assessment of proposed commercial activities and their impact on residential receptors.

BS 4142 is also stated as preferred method of assessing commercial and industrial noise in the 'Industrial / commercial developments' section of the City of Manchester guidance.

However, Paragraph 1.3 of BS 4142 lists a number of activities that the standard should not be applied to. This list includes 'recreational activities'. BS 4142 therefore cannot be applied to the assessment of Tennis Court noise, and alternative guidance has therefore been sought.

5.3 Artificial Grass Pitches (AGP) Acoustics

Sports pitches will be assessed according to the recommendations of Sport England document 'Artificial Grass Pitches (AGP) Acoustics – Planning Implications'.

This document gives recommended methodologies for calculating the noise level due to AGP use at different receivers.

Although the Tennis Courts do not use artificial grass, the guidance of this document is considered the most relevant applicable to a proposed noise source of sports activity. The sports mentioned in the document are Football, Rugby and Hockey, sports which all include ball impacts, particularly Hockey.

The guidance of the document with regards to setting a noise limit for noise emissions is as follows:

"The determining noise criteria for AGPs proximity to residential properties, to avoid moderate annoyance in the daytime and evenings, as set by the World Health Organisation's 'Guidelines for Community Noise': 50 dB $L_{Aeq(1hour)}$ upper noise limit external to residential properties and within external living areas."

5.4 BS 8233: 2014 Internal Noise Criteria

BS 8233: 2014: 'Guidance on sound insulation and noise reduction for buildings' describes recommended acceptable internal noise levels for residential spaces during daytime and night-time hours. These levels are shown in Table 5.1.

Activity	Location	Design range $L_{eq,T}$	
		Daytime (07:00-23:00)	Night-time (23:00-07:00)
Resting	Living Room	35 dB(A)	-
Dining	Dining Room/Area	40 dB(A)	-
Sleeping	Bedroom	35 dB(A)	30 dB(A)

Table 5.1: BS 8233: 2014 recommended internal background noise levels

The guidance of BS 8233: 2014, with regards to external amenity spaces, is as follows:

"For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited."

5.5 Adopted Criteria

British Standard 8233: 2014 gives recommendations for acceptable internal noise levels in residential properties. Assuming worst case conditions, of the closest window being for a bedroom, BS 8233: 2014 recommends $L_{Aeq;16hr}$ 35 dB(A) as being acceptable internal resting conditions during daytime.

With loudest external levels of 50 dB(A) at the nearest residential facade, acceptable internal conditions would be met by taking the attenuation of the window itself into consideration. According to BS 8233: 2014, a typical building facade with a partially open window offers 15 dB attenuation, resulting in an internal level of 35 dB(A).

As this is comparable to the AGP guidance, 50 dB(A) will also be adopted as the criterion to be achieved at residential facades.

As the guidance of BS 8233: 2014 for external amenity space is comparable to that of APG, we would recommend the lower guideline value of $L_{Aeq,T}$ 50 dB(A) would be an appropriate target to achieve in outdoor garden areas.

6.0 DESCRIPTION OF PROPOSALS

6.1 Source Noise

The measurements described in Section 3 of this report have been used to inform source noise levels for the proposed new tennis courts. A source noise representing all three courts in use, is shown in Table 6.1.

Noise Source	Sound Pressure Levels (at 3.5 meters, dB) in each Frequency Band								dB(A)
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
Tennis Courts	53	47	45	42	51	43	41	34	53

Table 6.1: Tennis Court Source Noise Measurement

Due to the number of matches ongoing during the above measurement, the level is considered suitably robust to assess the noise from the proposed three new courts.

6.2 Receiver Description

Two houses on Elm Road have been identified as the nearest affected residential receivers, as described in Table 6.2. These nearest noise sensitive receivers were identified through site plans and on-site observations.

Receiver Number	Description
1	Rear gardens and facades of 29 & 31 Elm Road - The closest part of the garden is 23 m from the closest point of the Padel Court - The closest façade is 33 m from the closest point of the Padel Court
2	Front garden and side facade of 33 Elm Road - The closest part of the garden is 41 m from the closest point of the Padel Court - The closest façade is 45 m from the closest point of the Padel Court

Table 6.2: Noise levels and criterion at noise sensitive receivers

29 & 31 Elm Road comprise ground floor and first floor flats in the position marked as Receiver 1 in attached site plan 16764-NIA-03-SP1. The boundary to the rear garden in this location comprises a hedge, which would not be expected to provide any meaningful acoustic attenuation.

Additional screening is recommended to protect rear garden areas to 29 & 31 Elm Road that face the proposed courts.

The proposed barrier location is shown in Figure 6.1, marked in a yellow line.

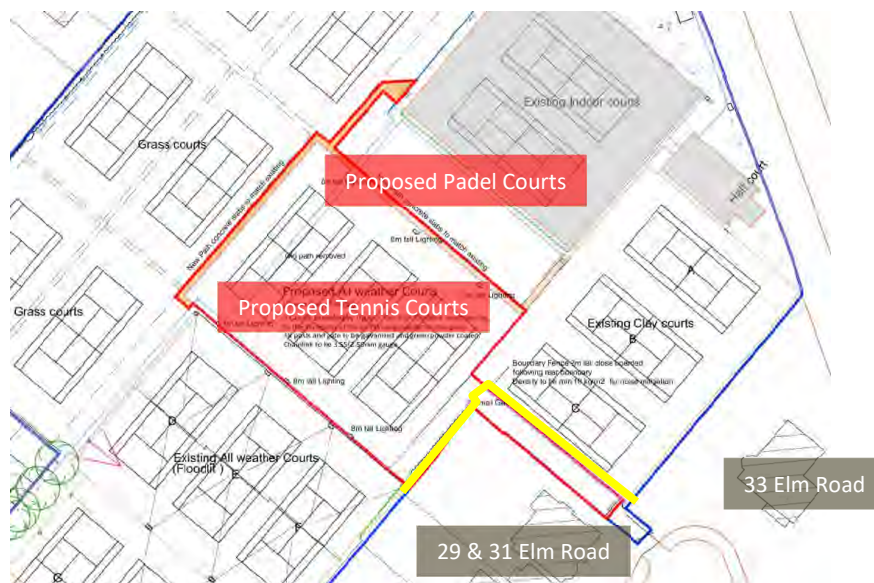


Figure 6.1: Plan view showing proposed barrier position

We would recommend a 2 m tall barrier in the position shown. The barrier should be imperforate, with no gaps around the perimeter, including between the foot of the wall and the ground below.

The barrier should be formed of a solid material with a minimum density of 10 kg/m².

It is understood the site boundary to 33 Elm Road does not have any solid screening and the preference is to avoid adding any screening in this area.

6.3 3D Noise Map Model

In order to assess the noise impact of proposed courts, noise emissions have been assessed by developing a noise map.

The noise model was constructed using the proprietary noise modelling software package CadnaA. The noise model was constructed utilising the following assumptions and parameters:

- Noise source height is 1.5 m above ground,
- Proposed barrier is present, at the site boundaries described in Section 6.2,
 - Height of the proposed barrier is 2 m,
- Garden Assessment:
 - Receiver 1 is 1.5 m above ground in rear garden of 29 & 31 Elm Road,
 - Receiver 2 is 1.5 m above ground in front garden of 33 Elm Road,
- Façade Assessment:
 - Receiver 1A is 1.5 m above ground on rear façade of 29 & 31 Elm Road
 - Receiver 1B is 4 m above ground on rear façade of 29 & 31 Elm Road,
 - Receiver 2 is 4 m above ground on side façade of 33 Elm Road
- Topography of the site is flat and level.

Calculations are performed over single octave bands from 63 Hz to 8 kHz.

Figure 6.1 visually represents the modelled tennis court development.

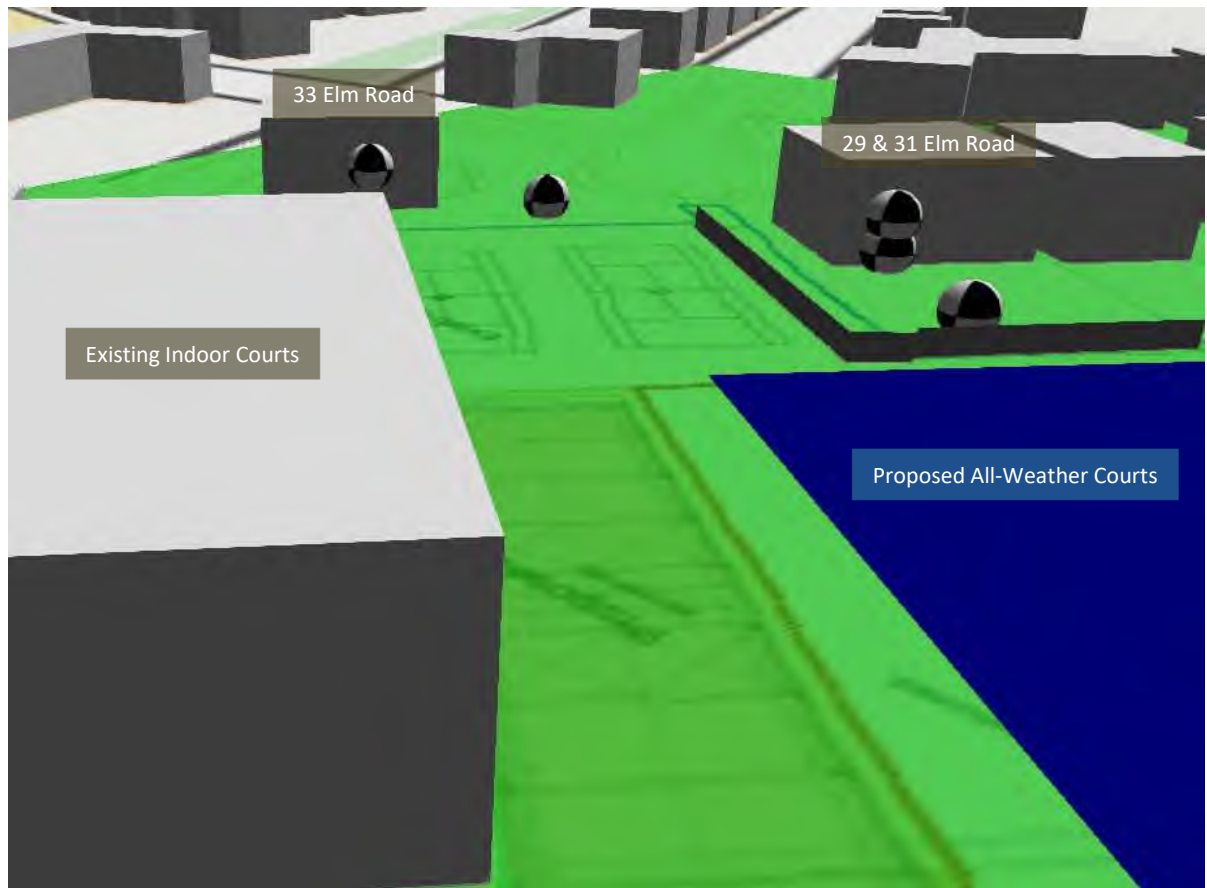


Figure 6.1: 3D view of noise mapping model

7.0 NOISE IMPACT ASSESSMENT

Receiver levels have been calculated using the constructed noise model, with receiver positions placed as shown in Figure 7.1.

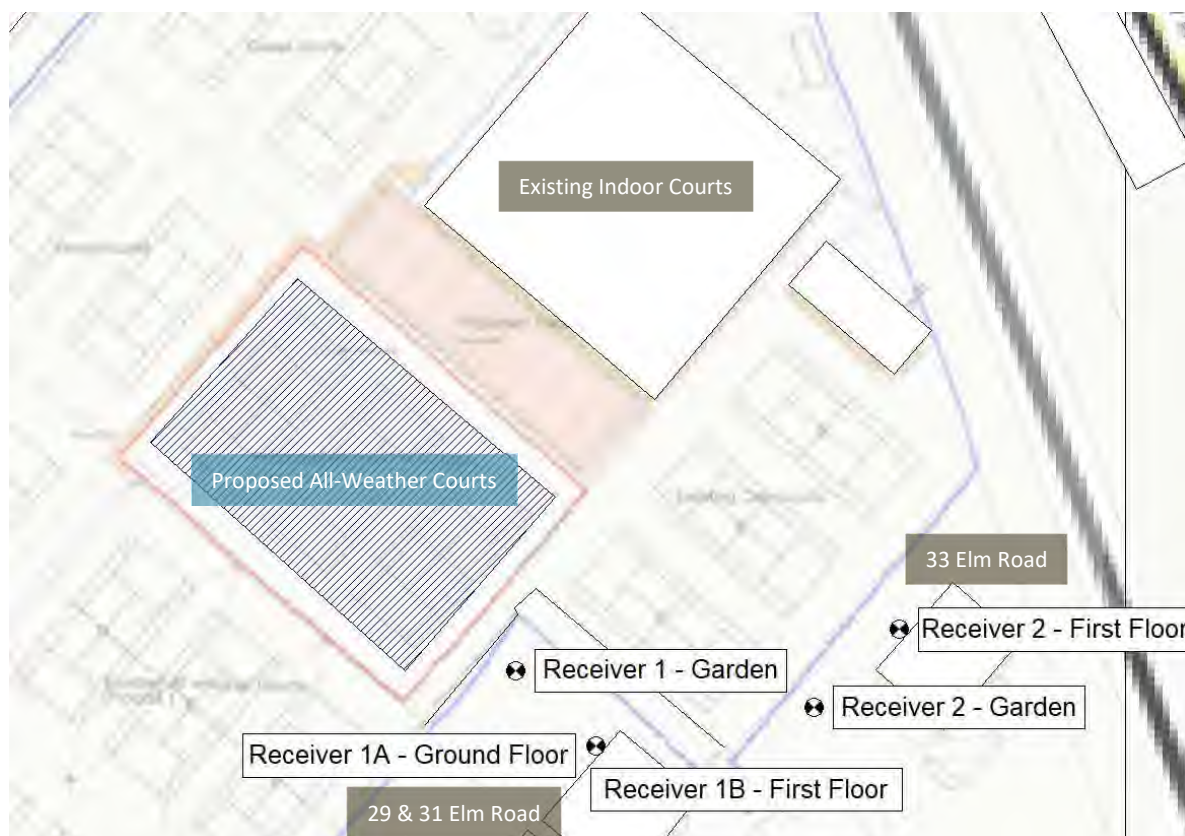


Figure 7.1: 2D View of noise map and receivers

7.1 Garden Noise Impact Assessment

Calculations have been undertaken for all three all-weather courts in constant use. Calculated noise emission levels due to the noise emission levels are shown in Table 7.1.

Receiver	Recommended Criterion	Noise Level at Receiver (due to sports pitches)
1 - Garden (29 & 31 Elm Road)	$L_{Aeq,t}$ 50 dB(A)	$L_{Aeq,t}$ 44 dB(A)
2 - Garden (33 Elm Road)		$L_{Aeq,t}$ 41 dB(A)

Table 7.1: Noise levels and criterion at noise sensitive receivers – gardens

As shown in Table 7.1, the distance and proposed screening to the residential gardens is expected to sufficiently reduce noise emissions due to the proposed all-weather courts, to the point where it would be below the recommended criterion at all receivers.

7.2 Façade Noise Impact Assessment

Further calculations have been undertaken to assess whether the noise emissions from the proposed courts would be expected to meet recognised British Standard recommendations, in order to further ensure the amenity of nearby noise sensitive receivers.

Calculated noise emission levels due to proposed all-weather court noise emissions are shown in Table 7.2.

Receiver	Recommended Criterion	Noise Level at Receiver (due to sports pitches)
1A – Ground Floor (29 & 31 Elm Road)		$L_{Aeq,t}$ 41 dB(A)
1B – First Floor (29 & 31 Elm Road)	$L_{Aeq,t}$ 50 dB(A)	$L_{Aeq,t}$ 45 dB(A)
2 – First Floor (33 Elm Road)		$L_{Aeq,t}$ 41 dB(A)

Table 7.2: Noise levels and criterion at noise sensitive receivers – facades

As shown in Table 7.2, the distance and proposed screening to the residential facades is expected to sufficiently reduce noise emissions due to the proposed all-weather courts, to the point where it would be below the recommended criterion at all receivers.

8.0 CUMULATIVE ASSESSMENT

As described in Section 2.0, wider proposals also include the provision of covered Padel courts. Detailed noise impact calculations are presented in Clement Acoustics report 16764-NIA-02, which accompanies the Padel court application.

Cumulative receiver noise levels have also been calculated using the constructed noise model and the source noise levels detailed in this report and report 16764-NIA-02, assuming all proposed Padel and tennis courts in simultaneous use. The calculated noise levels at the identified receivers are summarised in Table 8.1.

Receiver	Recommended Criterion	Noise Level at Receiver (due to sports pitches)
1 - Garden (29 & 31 Elm Road)	L _{Aeq,t} 50 dB(A)	L _{Aeq,t} 47 dB(A)
2 - Garden (33 Elm Road)		L _{Aeq,t} 47 dB(A)
1A – Ground Floor (29 & 31 Elm Road)		L _{Aeq,t} 45 dB(A)
1B – First Floor (29 & 31 Elm Road)		L _{Aeq,t} 49 dB(A)
2 – First Floor (33 Elm Road)		L _{Aeq,t} 47 dB(A)

Table 8.1: Cumulative noise levels and criterion at all receivers due to Padel and tennis applications

As shown in Table 8.1, the distance and screening to the residential gardens and facades is expected to sufficiently reduce noise emissions due to the cumulative effects of proposed Padel and tennis courts, to the point where it would comply with the criterion at all receivers.

9.0 CONCLUSION

Attended noise measurements have been undertaken at The Northern, West Didsbury, Manchester. Criteria has been set for noise emissions arising from the use of additional all-weather tennis courts, based on the set requirements of relevant guidance documents and standards.

Calculations according to the guidance from the relevant documents indicate that internal and external noise levels are expected to comply with relevant criteria.

Further calculations have demonstrated that the cumulative effects of noise from this tennis court court application and another Padel court application would also comply with the criteria.

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29 November 2022



APPENDIX A

GLOSSARY OF ACOUSTIC TERMINOLOGY

dB(A)

The human ear is less sensitive to low (below 125Hz) and high (above 16kHz) frequency sounds. A sound level meter duplicates the ear's variable sensitivity to sound of different frequencies. This is achieved by building a filter into the instrument with a similar frequency response to that of the ear. This is called an A-weighting filter. Measurements of sound made with this filter are called A-weighted sound level measurements and the unit is dB(A).

L_{eq}

The sound from noise sources often fluctuates widely during a given period of time. An average value can be measured, the equivalent sound pressure level L_{eq} . The L_{eq} is the equivalent sound level which would deliver the same sound energy as the actual fluctuating sound measured in the same time period.

L_{10}

This is the level exceeded for not more than 10% of the time. This parameter is often used as a "not to exceed" criterion for noise

L_{90}

This is the level exceeded for not more than 90% of the time. This parameter is often used as a descriptor of "background noise" for environmental impact studies.

L_{max}

This is the maximum sound pressure level that has been measured over a period.

Octave Bands

In order to completely determine the composition of a sound it is necessary to determine the sound level at each frequency individually. Usually, values are stated in octave bands. The audible frequency region is divided into 10 such octave bands whose centre frequencies are defined in accordance with international standards.

Addition of noise from several sources

Noise from different sound sources combines to produce a sound level higher than that from any individual source. Two equally intense sound sources operating together produce a sound level which is 3dB higher than one alone and 10 sources produce a 10 dB higher sound level.

Attenuation by distance

Sound which propagates from a point source in free air attenuates by 6dB for each doubling of distance from the noise source. Sound energy from line sources (e.g. stream of cars) drops off by 3 dB for each doubling of distance.

Subjective impression of noise

Sound intensity is not perceived directly at the ear; rather it is transferred by the complex hearing mechanism to the brain where acoustic sensations can be interpreted as loudness. This makes hearing perception highly individualised. Sensitivity to noise also depends on frequency content, time of occurrence, duration of sound and psychological factors such as emotion and expectations. The following table is a reasonable guide to help explain increases or decreases in sound levels for many acoustic scenarios.

Change in sound level (dB)	Change in perceived loudness
1	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	About twice as loud
20	About 4 times as loud

Barriers

Outdoor barriers can be used to reduce environmental noises, such as traffic noise. The effectiveness of barriers is dependent on factors such as its distance from the noise source and the receiver, its height and its construction.

Reverberation control

When sound falls on the surfaces of a room, part of its energy is absorbed and part is reflected back into the room. The amount of reflected sound defines the reverberation of a room, a characteristic that is critical for spaces of different uses as it can affect the quality of audio signals such as speech or music. Excess reverberation in a room can be controlled by the effective use of sound-absorbing treatment on the surfaces, such as fibrous ceiling boards, curtains and carpets.

Appendix B

Raw Measurement Data

Position 01 Data

	L _{Aeq}	L _A F _{max}	L _{feq} 50 Hz (1/3)	L _{feq} 63 Hz (1/3)	L _{feq} 80 Hz (1/3)	L _{feq} 100 Hz (1/3)	L _{feq} 125 Hz (1/3)	L _{feq} 160 Hz (1/3)	L _{feq} 200 Hz (1/3)	L _{feq} 250 Hz (1/3)	
27.05.2021 13:25:08.676	47.3	48.2	43.6	42.4	42.2	39.5	38.6	38.1	42.1	38.5	
27.05.2021 13:25:09.676	46.3	47.8	47.2	41.4	42.5	43.1	45	43.4	43.6	40.1	
27.05.2021 13:25:10.676	47.3	51	45.2	43.7	44.4	42	44.7	43.6	43.6	40.3	
27.05.2021 13:25:11.676	49.4	54.6	45.9	45.1	42.5	43.6	45.6	44.1	45.1	40.8	
27.05.2021 13:25:12.676	48.5	53.6	46.4	44	42	43.7	45.2	46.3	46.2	41.9	
27.05.2021 13:25:13.676	46.9	50	46.9	43.6	42.6	42.6	44.1	44.4	42.9	37.6	
27.05.2021 13:25:14.676	47.3	51.6	45.8	45.9	39.1	39.2	38.3	42.1	41.2	39.7	
27.05.2021 13:25:15.676	43.7	51.1	46.5	45.1	40.9	38.9	37.6	37.6	35	33.4	
27.05.2021 13:25:16.676	51.9	58.1	47.6	42.3	39	41.3	41.5	43.7	45.3	44.5	
27.05.2021 13:25:17.676	42.8	56.4	47.7	42.2	38.2	39.6	38.3	38.6	36.8	36.5	
27.05.2021 13:25:18.676	54.1	61.9	48.8	40.6	39.6	39.8	41.2	41.6	43.8	44.9	
27.05.2021 13:25:19.676	44.3	49.1	44.9	41.9	38	39.3	38.3	37.7	39	38.2	
27.05.2021 13:25:20.676	49.3	56.4	43.6	38.2	40.6	38.4	39.6	42.3	44	43.3	
27.05.2021 13:25:21.676	50.1	57.2	47.4	45.2	43.8	41.7	41.8	42.4	44.1	44.9	
27.05.2021 13:25:22.676	44.3	51.5	44.9	41.6	40.8	41.2	39.5	37.7	35.9	36.3	
27.05.2021 13:25:23.676	52.2	60.2	44.9	43.6	39.2	38.5	41.6	41.6	44.8	46.4	
27.05.2021 13:25:24.676	41.8	44	47	40.5	37.5	37.2	34.6	37.1	35.3	33.7	
27.05.2021 13:25:25.676	54.4	59.1	45.6	40.7	38.5	37.9	38.8	41.5	41.6	39.3	
27.05.2021 13:25:26.676	53.4	59.4	46.7	42.7	37.8	40.7	39.7	42.6	40.9	38.6	
27.05.2021 13:25:27.676	43.7	47.5	45.1	38.2	36.2	37.5	36.3	37.3	36.9	36.3	
27.05.2021 13:25:28.676	40.3	44.9	46.6	39.6	38.1	39.4	36.2	36.2	35.8	34.2	
27.05.2021 13:25:29.676	43.8	48.7	42.8	40.1	39.8	40.7	39.8	39.4	38.2	37.3	
27.05.2021 13:25:30.676	46.8	52	45.5	41.2	39.7	41.6	45.1	43.1	43.3	44.6	
27.05.2021 13:25:31.676	47.7	51.4	45.6	41.5	39	43.1	45.2	44.7	43.5	38.9	
27.05.2021 13:25:32.676	47.3	50.4	47.8	43.1	41.3	42.1	43.7	41.3	39	37.2	
27.05.2021 13:25:33.676	49.6	56.1	45.4	45.2	39.4	43.1	45	41.8	41	39.2	
27.05.2021 13:25:34.676	44.2	48	50	43.9	43	42.5	43.7	42.2	39.7	38	
27.05.2021 13:25:35.676	44.9	49.7	44.2	41.1	41.6	42.5	43.4	41.6	41.9	40.1	
27.05.2021 13:25:36.676	44.7	48.6	43.9	39.8	40.1	43.4	44.9	42.3	40.1	38.9	
27.05.2021 13:25:37.676	42.4	43.6	42.3	41.3	42.9	45.8	44.3	41.4	40.5	35.6	
27.05.2021 13:25:38.676	44.1	45.3	45.5	45.2	43.2	44.1	45.2	42.1	39.9	37.5	
27.05.2021 13:25:39.676	45.4	48.7	50	42.9	42.7	43.5	42.5	39.9	37.2	37.2	
27.05.2021 13:25:40.676	47.1	53.9	45.1	41.8	39.5	40.1	39	39.8	38.8	37.9	
27.05.2021 13:25:41.676	48	53.5	45	42.2	40.2	42.4	39.4	40.1	43.9	42.7	
27.05.2021 13:25:42.676	47.5	52.4	46.6	44	39.4	40.4	41.3	41.8	42.6	40.1	
27.05.2021 13:25:43.676	46.7	50.3	44.9	42.5	43.1	41.3	39.3	40.4	42.3	40.9	
27.05.2021 13:25:44.676	49.3	56.4	42.3	43.2	40.9	38.9	40.1	41.7	43	41.1	
27.05.2021 13:25:45.676	44.9	49.9	48.6	45.8	39.2	41.2	41.7	40.1	41.5	40.5	
27.05.2021 13:25:46.676	52.7	60.5	46.1	49.5	42	41.3	42.1	45.9	48.3	49.1	
27.05.2021 13:25:47.676	54.6	59.3	46.2	47.2	44.8	38.9	41.3	42.3	45	43.3	
27.05.2021 13:25:48.676	48.5	53.4	50.7	42.4	46.4	38.9	39.9	39.5	40.3	36.1	
27.05.2021 13:25:49.676	47.8	53.8	49	43.9	42.4	40.4	40.3	43.1	42.6	42.7	
27.05.2021 13:25:50.676	48.3	53.2	52.1	44.7	42.2	40.3	42.7	40.9	42	37.7	

27.05.2021 13:25:51.676	47.4	52.9	55.1	45.3	40.5	39.5	41.8	39	40.6	38.2
27.05.2021 13:25:52.676	50.8	57.5	51.3	48.5	38.9	42	41.8	46.2	48.9	45
27.05.2021 13:25:53.676	49.6	54.6	50	52.2	45.8	46.2	44.5	42.8	40.5	40.5
27.05.2021 13:25:54.676	50.1	54.9	47.7	51.1	47.1	49.1	48.4	45.5	45.2	42.5
27.05.2021 13:25:55.676	45.7	48.3	54.4	51	46.6	48.6	47.6	44.5	43.2	37.8
27.05.2021 13:25:56.676	48	51.5	55.1	53.4	48.4	47.3	45.8	44.7	44.9	42.1
27.05.2021 13:25:57.676	43.9	47	49.6	50.8	46.8	49.9	48.8	44.7	43.3	38.1
27.05.2021 13:25:58.676	46.6	51	55.2	52.9	48.5	49.3	47.7	45.5	44.5	41.6
27.05.2021 13:25:59.676	47.4	50.9	51.2	48.7	47.7	46.2	44.1	41.8	41.2	39.8
27.05.2021 13:26:00.676	44.4	49.3	50.2	47.1	43.9	43.3	44.9	40.3	40.7	38.5
27.05.2021 13:26:01.676	44	45.8	49.1	46.9	48	43.1	42.3	39.9	39.8	40.3
27.05.2021 13:26:02.676	41.8	44.5	49.6	45.1	45.8	41.1	39.3	38.5	38.6	38.1
27.05.2021 13:26:03.676	46	51.2	48.9	44.6	39.3	42.8	41.4	39.2	42.3	40.6
27.05.2021 13:26:04.676	43.4	47.4	51.6	47.6	41.5	41	40.1	39.8	44.9	40.7
27.05.2021 13:26:05.676	46	49.4	51.1	47.6	41.8	41.6	40.3	40.8	42.3	39.5
27.05.2021 13:26:06.676	45.1	47.4	51.8	56.4	45.4	42.5	39.4	43.4	42.6	37.6
27.05.2021 13:26:07.676	49.8	55.9	47.6	56.6	53.4	44	41.3	41.7	41.9	41.3
27.05.2021 13:26:08.676	46.6	54.4	47.1	53.2	55	46.6	41.4	41.2	41.7	38.3
27.05.2021 13:26:09.676	53.1	60.3	47.7	48.8	43.1	41.3	42.9	43.8	45.8	45
27.05.2021 13:26:10.676	52.6	59.2	49.8	49.3	41	42.8	44.3	47.3	46.5	44.7
27.05.2021 13:26:11.676	49.4	57.7	47.4	42.9	41.4	44.3	47.3	46.8	46.9	44.5
27.05.2021 13:26:12.676	44.8	47.7	46.5	46.6	43.4	41.7	44.3	42.7	44.9	39.1
27.05.2021 13:26:13.676	46.5	51.4	50.6	47.5	42.1	41	41.3	41.7	43.7	37.8
27.05.2021 13:26:14.676	42.9	47.2	47	46.9	39.4	39.2	38.2	37.6	42.8	36
27.05.2021 13:26:15.676	48.4	53.7	47.5	49.1	43.4	42.9	44.9	43.5	48.4	43.3
27.05.2021 13:26:16.676	52.2	60.3	47.4	49.5	41.9	40.6	41.8	43.4	46.5	43.7
27.05.2021 13:26:17.676	51	58.9	55.3	46.2	40.1	40.9	38.5	42.1	45.7	43
27.05.2021 13:26:18.676	43.8	58.5	53.8	46	40.1	39.9	39.7	40.4	43.1	37.5
27.05.2021 13:26:19.676	57.9	66.2	47.4	45.7	42.3	41.2	40.9	43.9	46.9	46.4
27.05.2021 13:26:20.676	42.8	59.9	46.5	42.7	39.4	39.6	38.2	39.2	41.2	37.9
27.05.2021 13:26:21.676	48.3	55	49.6	45.1	42.5	42.6	41.1	42.5	42.6	43.8
27.05.2021 13:26:22.676	46.6	51.4	44.7	42.7	44.8	40.7	40.2	42.9	44.6	42.8
27.05.2021 13:26:23.676	53.1	60.4	45	42.7	42.8	39.9	41.2	43.2	47.8	47.1
27.05.2021 13:26:24.676	59.1	67	42.4	44	42.8	42	42	45.8	45.9	45.6
27.05.2021 13:26:25.676	61.3	66.7	45.9	47.6	40.9	41.7	38.6	44.9	45.6	39.8
27.05.2021 13:26:26.676	56.5	63.6	48.3	55	42.6	43.5	40.4	42.6	46.2	43.1
27.05.2021 13:26:27.676	45.1	48.2	46.6	50.8	47.8	44.4	44.5	44	45.6	39.7
27.05.2021 13:26:28.676	45.9	49.5	51	42.7	49.6	42.7	42.8	42.5	44.6	37.1
27.05.2021 13:26:29.676	46.4	50.9	47.6	45.2	44.1	42.6	39.6	42.6	44.9	37.7
27.05.2021 13:26:30.676	45.4	49.9	47.8	48.9	42.1	43.3	42	48.9	48.9	36.2
27.05.2021 13:26:31.676	50.9	53.3	47.4	49.3	43.4	39.9	40.1	54.8	53	41.5
27.05.2021 13:26:32.676	46.3	50.7	47.7	45.1	49.2	41.4	42.2	54.4	50.9	33.8
27.05.2021 13:26:33.676	45.4	47	52.8	41.5	40.7	40.2	39.1	50.2	45.7	35.2
27.05.2021 13:26:34.676	48.3	52.5	52.4	44.3	40.2	40.3	40.7	52.6	46	41.6
27.05.2021 13:26:35.676	49.4	54.1	50.3	43.3	41.3	44.3	43.1	56.8	48.8	41.9
27.05.2021 13:26:36.676	48	54.1	54.8	47.5	43.4	46.7	42.8	53.9	46.2	40.4
27.05.2021 13:26:37.676	48.5	51.6	54.1	49.7	43.8	44.2	43.7	53.1	43.9	40.1

27.05.2021 13:26:38.676	44.3	46.7	50.2	45.6	40.5	41.8	40.8	49.4	39.4	37.9
27.05.2021 13:26:39.676	48.6	51.1	50.3	44.3	41.8	42.6	39.9	57.8	43.4	37.9
27.05.2021 13:26:40.676	45.4	48.1	47.9	44.7	44.6	42.3	39.5	53.5	41.5	38.5
27.05.2021 13:26:41.676	46.2	47.6	48.2	41.8	41.9	40.1	40.1	55.8	41.9	36.4
27.05.2021 13:26:42.676	46.3	48	47.9	40.1	40.1	41.6	40.9	58.2	40.3	33.9
27.05.2021 13:26:43.676	49.2	49.8	52.1	42.3	41.8	44.2	43.8	61.4	41.9	36.8
27.05.2021 13:26:44.676	47.9	49.2	50.2	43.2	42.5	42.3	44.1	60.4	40.3	34.4
27.05.2021 13:26:45.676	49.2	52.8	44.7	41.7	42.4	41.9	45	60.5	41.1	39
27.05.2021 13:26:46.676	50.8	53.2	47.6	42.7	41.4	40.3	46	59.7	43.7	45.6
27.05.2021 13:26:47.676	52.5	57.8	46.6	40.7	39.7	40.5	48.1	61	45.9	46.4
27.05.2021 13:26:48.676	53.6	56.8	48.4	44.7	39.8	40.3	52.9	64	46	43.2
27.05.2021 13:26:49.676	58.6	66.4	47.5	42.2	39.8	41.2	50.3	58.8	46.1	47.2
27.05.2021 13:26:50.676	54.7	58.9	49.5	41.6	41.4	41.6	54	60.1	48.1	46.5
27.05.2021 13:26:51.676	55.8	57.5	47.6	42.6	41.5	41.8	63	66.3	43.4	46.6
27.05.2021 13:26:52.676	52.9	55.1	47.3	42.4	41.1	44.6	61.2	61.9	44.1	47.2
27.05.2021 13:26:53.676	53.3	54.9	46.5	43.6	43.1	43.1	62.4	59.3	46.5	46.9
27.05.2021 13:26:54.676	50.6	52.9	46.6	42.8	42.8	43.5	62.5	56.5	46.1	45.9
27.05.2021 13:26:55.676	50	52.1	48.6	41.9	40.1	41.7	59.8	50.9	44.2	44.4
27.05.2021 13:26:56.676	50.4	52.3	50.9	43.6	41.3	43.2	62.7	52.2	43.5	45.8
27.05.2021 13:26:57.676	50.4	51.6	48.2	45.5	41.2	44.2	61.7	49.6	40.7	46
27.05.2021 13:26:58.676	49.8	53.9	51.1	44.3	41.2	43.6	58.4	46.8	44.3	46.3
27.05.2021 13:26:59.676	53.8	57.2	48.2	45.6	44.1	43.9	53.9	43.1	46.9	47.7
27.05.2021 13:27:00.676	53.6	56.7	47.1	45.1	41.4	42.8	57.5	43.9	44.5	46.6
27.05.2021 13:27:01.676	54.7	58	45.3	47.9	41.2	45.1	60.6	44.3	45.4	48.3
27.05.2021 13:27:02.676	52.4	57.4	50.5	47.8	42.6	44.9	59.6	44.2	45.1	45.3
27.05.2021 13:27:03.676	56.2	61	48	44	41.7	47.5	62.8	45.1	43.8	44.9
27.05.2021 13:27:04.676	56	62.2	51	50	48.5	50	61	50.9	49.1	47.2
27.05.2021 13:27:05.676	48.3	52.3	50.9	47.3	49.7	50	61.6	47.6	45.4	44.9
27.05.2021 13:27:06.676	47.3	49.1	44.2	42.6	41.2	47.7	59.5	40.6	43	44.7
27.05.2021 13:27:07.676	45.8	46.7	46.5	44	40.6	49.3	59.1	40.2	41.3	41.8
27.05.2021 13:27:08.676	47.3	47.8	47.6	45.9	39.1	52.9	61.8	42.7	42.1	42
27.05.2021 13:27:09.676	48.5	52.6	45	45.4	41.8	53.2	60.5	41.8	43.1	45.4
27.05.2021 13:27:10.676	46.9	49.4	47.1	43.1	41.5	51.2	56	41.4	41	41
27.05.2021 13:27:11.676	49.7	53.8	45.9	42.5	38.9	52.5	54.6	42.8	43.3	44.2
27.05.2021 13:27:12.676	54.4	60.9	46.8	43.9	38.6	54.7	55.2	43.9	43.2	43.2
27.05.2021 13:27:13.676	56.5	64.3	49.2	43.9	40.9	56.9	54.2	44	45.7	45.7
27.05.2021 13:27:14.676	49.7	58.8	51.6	52	52.1	59.9	54.7	49	49.4	46.9
27.05.2021 13:27:15.676	57	64.7	48.3	43.9	40.1	55.3	50.6	45.6	49.4	50.9
27.05.2021 13:27:16.676	49.9	58.9	45.7	42.8	40.4	60.7	53.7	41.1	42.3	45.9
27.05.2021 13:27:17.676	55.7	61.8	48.6	44.9	42.2	60	51.6	44.9	48	48.3
27.05.2021 13:27:18.676	65.2	71.5	50.9	44.2	40.7	58.8	51.5	45	46.9	48.9
27.05.2021 13:27:19.676	54	59.3	46.4	43.1	40.8	57.3	47.7	49.3	44.5	45
27.05.2021 13:27:20.676	54.4	55.4	45.6	42.1	39.8	57.2	45.3	49.1	51.6	43.2
27.05.2021 13:27:21.676	56.2	60.1	46.4	43.4	42.4	54.7	47.3	45.6	55.3	58.5
27.05.2021 13:27:22.676	54.9	59.3	53.9	45.9	45.8	53.3	47.6	44.8	58.6	57.4
27.05.2021 13:27:23.676	57.4	60	55.2	55.2	58.1	57.1	53.3	54	61.5	53.6
27.05.2021 13:27:24.676	51.5	56.7	46.6	47.9	48.9	51	44.5	47	53.3	46.8

[illegible]

Lfreq 315 Hz (1/3)	Lfreq 400 Hz (1/3)	Lfreq 500 Hz (1/3)	Lfreq 630 Hz (1/3)	Lfreq 800 Hz (1/3)	Lfreq 1 kHz (1/3)	Lfreq 1.25 kHz (1/3)	Lfreq 1.6 kHz (1/3)	Lfreq 2 kHz (1/3)	Lfreq 2.5 kHz (1/3)	Lfreq 3.15 kHz (1/3)
39.1	37.6	32.7	34	36.6	37.7	38.4	36.1	34.2	39.2	36
39.2	37.8	36.5	40.6	37.4	36.2	34.7	35.1	33.2	32.4	31.6
39.2	38.4	37.9	39.1	39.4	38.2	34.4	35	37.9	32.7	33.5
44	46.7	44.8	38.5	39.3	38.7	39.3	33	30	35.4	35.1
40.9	44	43.3	38.5	38.7	37.5	37.2	34.6	32.1	33.8	33.7
38.4	38.5	39.2	37.4	39.1	41.4	35.3	33.5	31.6	30.9	30.8
38.5	37.5	36.1	36.7	37.9	38.9	38.3	36	37.2	35.7	31
32	31.8	33	31.8	33.3	34.2	32.6	31.3	34.3	36.9	28.5
41.1	38.4	37.3	42.4	44.1	46	42.4	41.5	40.1	37.9	35.4
33.8	31.9	32.9	35.4	34.7	34.7	33.8	31.9	29.8	28.6	25.7
42.7	38.5	37.7	40.8	38.8	48.8	50.3	39.2	35.4	35	33.3
35.2	33.2	33.2	34.2	35.5	37	35.5	33.8	30.1	31.6	29.2
40.8	38.7	35.3	36	37.4	41.4	42.4	37	40.6	34.4	34.3
44.1	41.6	38.3	39.1	39.9	42.8	42.8	37.1	36.5	37.7	32.5
32.5	32.8	32.1	31.1	32.9	34	32.2	35.2	33.9	35.9	33.5
43.8	40.7	40.3	38.8	37.7	48.8	44.2	38	35	34.8	35.6
33.6	32.5	33.6	34.3	33.2	32.5	30.6	31.7	30.1	28.3	26.1
41.5	40.3	36.9	50.9	49.8	47.7	42.7	38.2	32.2	33.4	30.1
39.4	36.9	40.6	53.9	44.1	40.5	34.7	33.5	33.4	35.1	30
35.3	34.6	32.7	31.5	33.1	34.4	31.8	31.6	36	34.3	27.3
32.8	31.9	32.1	31	32.6	32.6	30.8	27.7	26.1	25.4	23
36.9	36.2	32.2	33.1	35.5	38.3	35	30.7	28.6	27	22.6
46.7	45.4	39.5	36.9	34.2	35	33.6	29.6	26.4	23.9	23.2
38.8	39.6	37.6	46.1	38.8	37	33	31.6	31.3	31.1	28.7
39.4	40.4	38.7	39.7	39.2	39.9	38.3	34.6	30.7	33.4	29.2
37.8	36.6	36.8	35.8	44.2	42.8	39	38.1	35.9	32.4	31.7
34.9	35.9	35.5	37.8	38.1	37.8	30.9	28.7	26.9	24.3	23.3
39.1	37.1	34.8	34.6	36.4	37.7	36.1	32.6	31.6	27.3	24.2
38.6	36.6	34.4	36.4	34.7	33.1	32.1	31.4	36.1	34	29
33.5	34.6	34	32.6	33.7	32.9	31	30.1	30	31.3	23.9
37.7	35.8	36.3	37	35.7	34.4	33.4	31.7	32.1	28.8	25.9
35.1	35.8	35.4	34.3	36.3	38.9	35.8	34.6	34.6	30.1	27.9
37.3	39.4	38.7	40.1	38.4	36.7	40.1	32.8	32.1	33.8	32.7
42.9	45.2	42.6	36.8	39.2	40	36	33.2	29.4	30.1	30.1
36.9	38.8	38.3	38.2	34.4	34.9	41.7	38.1	35	33.4	31.2
38.4	41.9	37.8	38	35.2	39.4	35	36.8	34.3	33.7	26.9
38.2	35.6	40.1	43.6	42.7	39.7	36.9	37.1	35.8	36.9	34.4
38.1	37.6	35.7	34.2	34.7	37.7	35.8	33.8	31.6	28.1	26.9
47.2	47	45.8	45.2	40.4	45.6	41.6	37.2	38.3	36.9	33.2
41.9	39.9	39.8	43.8	46	50.9	44.7	39.7	42.8	39.6	34.8
34.5	43.2	38.8	38.8	37.4	37.2	39.6	42.4	33.4	34.1	32.7
41.9	40.7	37.7	35.7	36.9	42.7	38.8	34.7	33.8	30.8	29.1
35.6	44.5	37.7	41.9	37.8	41.9	35.5	36.9	34.8	34.3	32.2

36	34.6	33.8	43.4	38.9	38.4	35.4	37.1	36.6	33	30
42.9	43.4	42.3	45.4	41.6	43.2	39.6	39.2	35.4	35.1	29.7
38	36.1	41.9	41.3	47.4	35.9	34.9	36.6	35.7	34.5	29.9
39.5	39.6	38.8	37.5	40.2	41.1	42.6	39.3	38.6	37.3	33.9
36	35.1	35.7	35.8	37.8	36.4	34.3	32.5	35.4	31.7	28.5
41.5	42.4	37.2	35.5	38.5	40.2	38.8	33.7	34.3	34.4	31
35.2	33.4	33.2	31.6	35.1	35.8	34.4	30.4	29.3	28.2	23.2
39.2	38.7	37.5	37.3	36.9	39.8	35.4	33	32.4	31.1	26.9
40.7	37.3	35.4	35.3	35.4	36.5	34.6	35.2	41	37.9	30.5
36.3	35.5	35.4	34.3	34.7	35.3	34.2	31.1	32.8	35.3	25.8
34.7	35	35.3	32.6	33.5	34.3	31.9	32.4	33.8	35.1	26.3
34.8	33.8	33.6	32	33.7	34	32	28.9	27.9	24.7	21.9
36.2	35.2	35.1	34.2	41.2	37.8	34.3	36	31.6	28.9	27.3
34.9	36.3	34.6	33.8	34.9	34.8	32	32.7	27.8	25	22.8
39.9	42.7	36.8	37.1	37.2	38.8	35.7	32.1	30.4	27.6	24.2
37.2	37.2	36.1	38	36.2	36.7	35	34.2	29.9	27.5	23.9
38.8	36.9	35.6	35.8	44.5	43.4	40.3	36.6	34.2	32.8	31.3
38.4	42.5	39.1	35.6	37.4	36.8	37.3	33.9	36.2	35.4	28.8
46	47.5	43.5	38.7	40.7	46	43.3	43.9	43.1	37.9	34.1
44.8	49.4	46.7	40.9	39.6	42.6	43.9	41.6	39.8	36.3	36.6
43.8	45.3	44.9	42	40	38.9	37.9	36.2	33.4	30.9	27.7
36.7	40.5	38.9	35.5	35.8	36.1	34.3	31.1	27.6	26.7	22.9
35.2	39.4	36.7	36.6	37.4	38.5	40.2	35.2	31.7	28.9	26.5
33.5	33.1	34	33.7	35.5	34.7	32.3	32.8	30	27.1	25.4
41.4	40.4	37.9	36	39.4	41.3	39.4	36.7	34.6	33.7	30.9
38.7	37.6	35.9	35.8	38	49.3	43.9	41.9	32.2	33.1	33
40.2	36.5	35.3	36.4	39.1	47.7	43.7	35	32.2	34.9	32.3
34.7	34.6	33.9	33.2	33.9	34.5	32.8	32.1	31.5	35.6	28.4
45.4	42.5	39.4	39.5	43.3	55.3	52	43.2	35.2	37.3	31.5
36.7	34.7	32.9	32.7	34.1	35.6	32.9	30.7	27.6	29.5	26.2
40.2	36.5	35.2	36.6	35.9	41.1	43.4	33.4	32.1	33.1	30.2
40.9	39.6	37	39.5	37.9	38.5	36.5	33.2	29.4	30.4	31.2
44.6	47.2	45	44.4	41.3	43.7	44.7	40.2	38.1	42.7	37.2
44.2	48	53.4	55.4	48.6	53.2	47.7	42.5	41.9	42.6	40
38	47.4	55.9	57.7	57.2	52.4	44	36.3	34.8	44	40.2
41.1	41.4	42.2	43.4	50.9	52.4	48.2	41.5	38.9	38.1	35.6
37.6	35.8	38.3	35.7	34.2	34	32.3	35	31	30	31.9
36.4	34	34.1	33.8	40.2	39.3	34.3	33.8	32.1	31.2	26.7
39.7	44.7	39	38.4	33.7	35.8	35.9	32.9	32.8	32.6	25.7
37.3	38.2	39.7	36.8	33.6	33.7	32	30.1	28.4	26.7	26.7
39.4	39.2	47.5	45.4	36.8	35.6	40.3	34.8	33.5	29.7	27.9
35.2	37.9	36.8	33.7	33.3	32	30.9	29.5	31.8	30	23.9
35.5	37.1	35.3	40.4	33.2	32.6	30.6	30.9	34	34.8	26.4
43.8	41.1	35.7	34.9	37.8	40.6	37.1	35.6	35.7	32	30.2
40.7	45.7	42.9	37.8	38.7	37.5	34.1	33.1	31.9	29.7	28.4
41.5	43.1	39.7	37.8	40.3	36.9	34.7	34.6	33.2	30.2	27.5
38.5	35.9	37.3	44.3	41.1	40	36.5	32.9	34	29.6	27.8

36	34	33.7	37.3	34.8	34.4	34.4	31.6	31.7	27.7	24.9
38.6	37.1	36.7	40.2	35.6	36.6	36.9	34.8	35.5	33.6	29.4
37.9	37.8	34.9	32.5	33.3	34.7	32	31.5	31.1	34.1	25.2
35.6	40.9	35.7	35.6	33.8	34.6	32.3	31.3	30.1	26.1	25.8
34.9	31.9	31	31.8	32.3	33.2	30.3	27.3	25.6	23.4	26.3
40	33.6	31.8	34.5	32.6	33.6	31.9	31.8	28.5	30	29.4
36.4	35.3	31.1	31.8	33	33.2	30.7	28.3	25.3	22.7	24.2
39.9	39.2	38	38.7	36.4	34.3	36.4	31.9	32.3	31	30.1
43.4	42.5	40.9	38.9	39.2	42.1	39.4	38.5	33.7	32	31.8
46.2	44.9	41.2	38.7	38.8	44.6	43.8	38.5	34.3	31.8	31.9
44.4	41.6	39.2	41	41.2	43	42.5	39.1	39.1	37.4	36.8
48.7	45.4	40.6	44.7	53	54.9	48.9	40.7	37.2	39.8	39
47.4	45.3	44.7	46.3	49.1	47.1	42.2	35.3	35.1	38.2	38.8
49.4	40.1	40.3	44.8	42.5	42.7	41.9	36.1	34.4	36.8	36.4
44.2	40.8	40.5	37.6	42.8	38.5	38.4	38.1	35.8	35	32.9
45.5	44.2	42	42	36.4	38	37.6	39.2	34.6	35.2	34.9
43.3	41.4	36.5	33.8	34.4	36.4	34.3	32.5	30.5	29.8	33.2
42.1	43.2	40.6	42.1	36.4	37.1	38.1	37.4	32.6	34.4	31.5
45.1	41	39.8	38.3	35.4	37.1	37	34.5	32.9	30.1	29.2
45.7	44.2	42.3	37.6	37.9	38.1	36.3	34.9	34.2	30.6	29.5
42.9	42	37.3	35.5	39	39.5	38.3	36.5	36.5	33.4	31.2
42.9	41.3	47.3	45.5	42.3	39	35.9	42.6	45.5	44.8	40
42	41.4	46.9	50.2	44.7	41.9	34.6	39.3	39.9	42.5	37.8
39	43.7	47.3	50.8	43.8	40.2	39	41	45	40.4	38.9
41.1	44.9	49	48.4	41.1	38.1	40.7	31.7	30.5	33	33.9
44.7	44.2	39.9	45.3	50.4	49.1	46.4	44.2	44.3	37.9	36.2
48.4	45.6	49.1	48	46.5	38.4	38.3	43.1	49.1	45.9	32.8
42.5	39	38.5	35.2	34.1	35.1	33	30.4	28.1	25.9	28.3
44	40	36.1	32.4	32.8	33.5	32.9	29.1	26.6	28.2	32.3
38.8	35.9	33.2	32	33.8	33.6	31.3	28.8	27.7	27	27.3
39	37.6	37.3	31.6	33.4	32.8	30	29.2	27.2	27	23.2
43.2	36.2	36.6	34.9	36.5	35.1	32.9	32.8	35.4	37.5	31.9
42.3	38.8	41.9	34	34.5	35.8	35	34.8	34.4	31.3	27.5
42.9	41.1	38.9	35.8	36.2	41.3	38.7	32.8	29.2	26.8	29.1
42.8	48.7	42.8	45.5	42.5	46.7	48.7	39.6	38.7	35.9	33.8
44.3	42.2	39.1	40.2	45	53.5	49.9	38.3	37.1	37.9	32.7
42.9	40.8	37.1	36.6	39.7	39.8	38	36.2	34.7	34.3	28.1
48	47.6	45.5	44.1	41.8	53.1	49.9	41.6	40.5	39	33.6
42.2	44.8	37.3	35.5	35.4	37.2	34.3	32.4	31.7	32.9	34.3
44.7	45.2	47.5	50.2	42.8	50.8	45.2	40	38.9	40.3	37
45.2	47.9	56.7	65.7	49.1	56	49.6	45.5	47.1	44.6	40.7
49.2	49.9	44.6	39.6	38.1	39.9	38.6	35.7	34.8	32.5	31.9
52.4	55.8	45.3	40.4	41.6	39.1	38.4	37.8	33.2	30.7	30.8
42.3	54.6	51.5	40.4	44.5	43.5	43.3	40.8	41.5	34.4	32.1
46.6	48.3	50.5	39.8	41.6	40.1	42.3	38.8	39.3	37.3	33.3
50.7	51.9	49.4	45.2	45.1	43.7	43.7	43.5	39.5	37.9	36.4
45.6	45	43.5	41.6	41.6	42.9	37.7	36.1	31.2	29.3	31.8

43.6	41.3	41.1	38.1	36.5	39.4	35.1	33.1	30.7	28.1	26.9
51.2	49.7	48.4	38.8	40	41	39.7	37.7	39.1	35.9	31.6
51.3	55.8	44.6	48.1	48.4	45.6	41	40.9	44.3	42.5	41.1

Lfeq 4 kHz (1/3)	Lfeq 5 kHz (1/3)	Lfeq 6.3 kHz (1/3)	Lfeq 8 kHz (1/3)	Lfeq 10 kHz (1/3)
28.9	25.2	22.8	18.9	15.4
26.2	21.4	17.7	14.7	11.4
30	25	21.1	21.6	16.5
28.8	27.2	24.2	19.1	16.5
32.8	33.3	31.4	28.2	24.1
27.3	25.7	23	20.2	16.4
27.7	26.6	24.9	20.9	17.3
22.9	20.8	20.2	17	12.4
31	28.5	24.5	20.5	18.8
23.2	20.9	18.2	16.1	12.9
29.6	29.3	25.2	24.2	21.5
27.3	25.5	23.5	20.6	18.8
29.6	27.7	24.7	23.9	18.7
32.5	29.5	28.8	26.9	23.6
22.8	21.4	18.1	15	12.1
33.4	29.4	27.4	25.7	22.1
23.9	20.5	18.1	16.2	13
30	26.3	23	20.8	15.4
29.2	26.4	22.7	20.2	16.2
25.3	26.3	19.6	14.8	12
22.1	20	14.8	12.8	10.4
21.3	22.8	15.5	15.5	11.8
24.2	18.2	15.7	13.6	11.5
27.8	25.8	21.3	21.5	14.6
26.8	23.4	21.8	19.7	12.4
36.1	33.8	33.3	29.9	26
21	18.3	16.7	14.8	15.4
24.1	21.6	17.2	15.7	13.2
23.5	20.5	18.7	15.9	14.5
20.4	18.7	15	13.8	10.3
21.2	23.5	13.5	13.7	10.1
26.9	25.3	21.7	18.9	15.8
29.3	30.6	25.3	21.6	15.8
30.4	25.7	25.7	29.1	20.5
25.8	25.9	21.8	19.9	17.4
25.1	23.6	21.1	18.5	15.8
30.4	32.2	33.3	25.2	23.8
24.6	23.6	18.6	16.6	14.3
33.6	36.2	33.8	31.3	30.4
35.7	34.8	31.9	31.6	29.4
26.8	25.5	22.9	19.1	21.4
28	24.9	21.6	17.9	14.3
28.4	25.4	24.9	20.4	17.9

25.7	23.4	20.9	19.7	18
27.8	28.4	25.1	23.8	21.5
27.1	24.8	22.6	20.4	18.4
33.7	32.6	28.9	26.9	24.6
27.2	24.9	21.2	19.4	17.3
29.5	28.8	28.5	27.8	25.1
21.2	20	16.5	13	10.8
26.4	23	20.2	18.1	15.1
25.6	22.7	19.1	15.7	12.8
24.3	21.3	18.5	16.6	16.2
23.4	20.8	16.9	14.1	11.3
22.1	18	14.6	13	10.4
24	22.3	21.4	16.8	13.2
19.8	15.6	12.5	12.1	10
27.5	23.6	18.7	17.2	14.3
23.6	18.8	14.8	13.6	10.8
30.4	31.4	27.9	30.9	23.6
24.4	20.3	17.7	15.5	11.9
34.3	28.4	28.1	23.7	18.8
35.8	32.5	30.3	30.1	27.1
25.4	22.2	19.7	17.9	16.3
19.1	18.3	15	14.2	11.8
24.5	21.1	20.3	17.2	15.4
22.2	19	16.7	14.6	12
27.8	25.5	22.4	19	17
31.1	27.3	22.4	21.5	17.4
28.4	27.1	27.8	26.8	22.9
22.7	20.4	19.7	18.8	17
31.1	29.4	28.4	25.3	21.6
21.7	18.4	16.1	14.6	11.8
27.1	27.5	24.7	23	22.3
26.8	22	18.9	18.2	16.9
35.3	33	28.5	27.3	24.8
37.5	35.6	33.6	31.4	30.9
31.8	26.1	24.2	20.6	16.7
36.2	33.8	33.4	30.3	26.7
27.6	26.9	25.3	21.5	24.5
26.1	24.3	21.8	19.1	15.4
24.4	21.1	19.4	16.9	14.6
30.2	22.2	18.4	16.2	13.1
28.2	23.3	19	17.5	14.6
23.4	22.2	17.2	14.7	11.7
20.4	18.1	14.7	13.5	10.6
32.3	27	24.7	23.1	19.1
26.5	21	20.7	20.8	16.3
25.5	23.5	19.6	16.8	14.1
22.6	19.3	17.1	17.8	15.8

23.2	21.3	17.6	16.6	13.6
30.5	23.9	20	15.7	12.6
26.4	24.3	20.6	14.8	11.8
25.7	21.7	15.7	14	11.6
27.2	25.3	16.2	13.2	10.9
31.3	26.6	17.2	13.8	10.2
25.6	22.5	14.2	11.9	10.1
31	26.5	20.1	19	14.8
31.5	30.1	26	25.1	20.9
33	32.3	24.5	21.4	20.5
37.2	33.5	31.9	29.6	26.3
35.4	32.2	28.8	27.7	24.8
33.6	28.2	23.4	20.9	18
32	28.6	23.7	20.1	16.5
34.2	29.9	27.3	20	16.6
38.2	42.7	25.4	20.2	15.4
30.6	27.4	22.7	18.6	12.8
25.2	21.9	18.9	14.7	12
24.6	24.4	22.1	17.4	15.9
26.6	26.5	22.5	20.5	14.2
36.1	36.9	23.3	20.9	15.4
35.3	32	30.1	26.2	17.6
35.3	34.8	26.2	26.8	20.7
36.4	32.2	28.3	21.9	20.4
36.7	39.2	27.1	21.1	16.1
37.7	32.4	33.1	28.9	25.8
25.4	20.9	16.6	14.9	13.1
32.8	33.8	24	17.8	12.5
33.9	32.8	22.7	15.4	10.6
29.4	29.4	16.1	16.1	10
21	19.8	13.7	15.5	12.3
27.8	25.3	23.1	20.3	17.3
27.5	22.4	17.5	15.3	13.5
35.8	43.7	31.2	16.3	13.6
37.2	37.9	32.1	24.7	19.4
31.1	30	26.4	26.2	24.3
27.3	25	22.4	20.6	16.6
35.3	41.2	28.6	25.3	23.3
39	41.4	35.2	20.8	17.4
33.9	31.4	30.9	27.9	24.4
37.5	35.2	29.5	27.8	25.4
41.3	49.7	31.9	19.9	15.5
37	40	30.9	17.9	13
34.8	33.3	31.9	28.1	22.9
33.8	32	26.8	22.3	16.6
40.5	48.5	33.4	25.9	20.8
38.4	41.9	34.7	17.4	12.9

28.7
33.2
41.2

25
30.3
44.4

20.6
25.9
35

17.8
23.4
27.1

16.7
20.9
22.4

Position 02 Data

	L1Aeq	LAFmax	L1eq 50 Hz (1/3)	L1eq 63 Hz (1/3)	L1eq 80 Hz (1/3)	L1eq 100 Hz (1/3)	L1eq 125 Hz (1/3)	L1eq 160 Hz (1/3)	L1eq 200 Hz (1/3)	L1eq 250 Hz (1/3)	
27.05.2021 13:29:19.365	42.6	44.8	43.2	39.7	37.6	37.7	37.2	38.9	38.6	38.1	
27.05.2021 13:29:20.365	53.1	60.9	44.6	36.9	37.8	37.9	36.9	40.9	40.7	41.5	
27.05.2021 13:29:21.365	57.9	66	47.7	44.2	40.1	39.2	41.4	42.5	48	50.5	
27.05.2021 13:29:22.365	49.4	65.9	44.1	43.4	38.8	41.1	43.5	40.6	44.1	44.6	
27.05.2021 13:29:23.365	59.1	67	41.5	49.8	41	42.5	43.7	46.9	48	52.3	
27.05.2021 13:29:24.365	49.9	55.5	40.9	44.2	38.9	41	42.3	37.5	42.1	41.7	
27.05.2021 13:29:25.365	50.4	54.3	41	40.8	37.3	38.1	40.2	43.6	42.1	37.6	
27.05.2021 13:29:26.365	47.9	54.2	42.3	41.2	40.5	38.5	41	43.9	40.9	39.9	
27.05.2021 13:29:27.365	50.2	51.9	44.5	39.5	40.3	39.3	39.1	44.6	39.9	39.3	
27.05.2021 13:29:28.365	46.8	49	43.9	38.5	38.9	41	37.6	46.1	39.9	36.7	
27.05.2021 13:29:29.365	47	48.5	41.1	40.9	39.3	43.3	36	43.6	35.7	36.9	
27.05.2021 13:29:30.365	48.9	52.6	44	37.6	39.6	40.8	37.4	44.9	40.5	41.9	
27.05.2021 13:29:31.365	52.1	57.5	44.6	39.4	38.6	37.6	41.5	42.9	44.1	45.7	
27.05.2021 13:29:32.365	50.8	53	42.9	38.4	38.1	37.7	39.6	40.6	42.8	39.9	
27.05.2021 13:29:33.365	49.5	54.6	42.2	39.6	35.4	40.7	40.6	38.3	38.2	40	
27.05.2021 13:29:34.365	47.7	50.2	43.4	39.7	35.6	39.1	37.6	38.4	41.5	40	
27.05.2021 13:29:35.365	43.3	47.5	46.7	40.1	38.8	38.9	36.2	40.2	40.7	35.9	
27.05.2021 13:29:36.365	45.5	49	48.6	39.4	39.8	38.4	36.1	39.1	41.8	38.7	
27.05.2021 13:29:37.365	45.9	48.4	48.9	39.7	36.3	37.5	37.3	37.9	37.6	38	
27.05.2021 13:29:38.365	45	46.4	49.1	40.9	34.8	38.7	39.5	37.5	38.1	36.8	
27.05.2021 13:29:39.365	53.5	61	44	40	36.6	38.4	41.7	41.6	41.1	39.9	
27.05.2021 13:29:40.365	50.9	56.4	46.6	41.9	38.3	40.8	39.5	40.3	39.1	39	
27.05.2021 13:29:41.365	45.7	50.5	47.9	39	36	37.8	37.7	37.5	35.8	36.1	
27.05.2021 13:29:42.365	41.8	43	45	39	34.8	39.1	36.1	38.3	37	34	
27.05.2021 13:29:43.365	45.6	48.2	45.9	40.9	37.6	38.7	37	37.4	36.6	34.1	
27.05.2021 13:29:44.365	41.9	43.6	46.2	42.5	39.3	38.9	36.9	38	35.5	36.1	
27.05.2021 13:29:45.365	49.6	53.3	44.9	40.5	40.8	39.5	38.4	42.8	37.6	41.9	
27.05.2021 13:29:46.365	43.7	47.2	44.6	39.9	34.7	37.6	37.7	36.8	36	34.1	
27.05.2021 13:29:47.365	45.9	49.8	43.1	42.3	36.6	38.5	38.2	38.4	41.5	39.9	
27.05.2021 13:29:48.365	46.6	49.8	42.8	45	37.7	39.4	40.6	39.2	40.4	41.2	
27.05.2021 13:29:49.365	46.7	50.4	41.6	41.3	36.1	40	40.9	39.7	40.7	43.7	
27.05.2021 13:29:50.365	46.9	49.4	43.6	45.7	36.1	40.2	39.6	38.7	37.3	36.3	
27.05.2021 13:29:51.365	47.6	52.3	43.4	41.6	39.3	39.2	38.5	39.4	40.8	41.5	
27.05.2021 13:29:52.365	46.6	49.2	45.5	44.1	36.9	39.4	39.5	37.6	37.4	37.6	
27.05.2021 13:29:53.365	53.1	56.7	46.8	47.9	38.2	38.3	39.7	39.8	41.3	41.5	
27.05.2021 13:29:54.365	47.7	54.1	46	44.4	37.3	35.3	37.9	38.2	35.5	34.6	
27.05.2021 13:29:55.365	54.7	61.1	46.6	45.9	39.9	37	36.6	42.6	41.4	39.6	
27.05.2021 13:29:56.365	47.8	50.9	46.3	42.9	39.8	37.6	40.1	40.4	41.9	43.8	
27.05.2021 13:29:57.365	52.5	58.4	48.6	42.3	41.2	39.6	41.2	46.1	48.4	50	
27.05.2021 13:29:58.365	59	66.9	45.7	41.4	39.3	37.4	40.1	45.8	46.7	51.8	
27.05.2021 13:29:59.365	51	60.4	46.3	44.8	38.6	39.1	40.1	41.2	42.4	43.8	
27.05.2021 13:30:00.365	52.9	56.8	46.4	43.5	39.9	39.9	39.8	43.7	43	45.1	
27.05.2021 13:30:01.365	54.6	61	48.2	42.2	39.2	38	41.4	45	46.5	48.3	

27.05.2021 13:30:02.365	49.9	54.6	47.4	40.4	40.1	39.9	44.5	45.1	43.6	44.6
27.05.2021 13:30:03.365	56.3	61.3	48.4	41.3	38	40.7	41.5	44.2	48	44.9
27.05.2021 13:30:04.365	55.8	58.8	50.8	42.5	41.5	39.2	42.3	43.6	46.9	38.2
27.05.2021 13:30:05.365	60.3	64.4	49.2	44.6	41.8	42.7	42	43.8	44.9	40.5
27.05.2021 13:30:06.365	51.7	60.3	44.9	42	38.5	43.2	41	39.7	42.2	38.8
27.05.2021 13:30:07.365	45.3	50.8	47.4	44.3	42.8	41.1	40.7	37.6	41.9	39.1
27.05.2021 13:30:08.365	43.5	44.4	48.5	46	42.2	40.9	37.4	38.6	38.5	39.2
27.05.2021 13:30:09.365	49.2	52.7	49.8	39.4	37.8	40	40.1	40.1	42.9	41.3
27.05.2021 13:30:10.365	46	50.6	45.8	42.9	40.3	40	38.5	41	40.8	41.2
27.05.2021 13:30:11.365	48.1	49.8	44.5	41.6	37.2	38.7	37.3	40.2	41	39.7
27.05.2021 13:30:12.365	48.6	52.3	42.4	39.8	37	38.7	38.8	39.6	40	42.4
27.05.2021 13:30:13.365	45.3	49.5	42.9	39.8	37.9	39.6	37.8	40.5	40	41.8
27.05.2021 13:30:14.365	42.1	46.1	44.4	40.1	38.3	36.3	37.2	39.1	37.9	37.3
27.05.2021 13:30:15.365	44.1	47.8	44.4	39.3	36.7	38.5	36.1	38.5	39.8	39.4
27.05.2021 13:30:16.365	41.3	42.4	47	46.4	40.7	37.7	38.9	37.8	35.9	35.2
27.05.2021 13:30:17.365	51	55.1	44.1	41.1	38	38	38.6	40.4	39.9	41.3
27.05.2021 13:30:18.365	55.6	62.5	48	45.4	39.6	38.3	39.1	43	41.7	44.5
27.05.2021 13:30:19.365	53.7	58.1	47	45.8	38.6	39.8	42.2	42.5	44.9	47.6
27.05.2021 13:30:20.365	44	48.6	45	38.9	36.7	37.9	37.3	37	37.8	36
27.05.2021 13:30:21.365	47	51.8	47	45.3	38.6	37.7	37.1	38.9	39.5	41.5
27.05.2021 13:30:22.365	48.7	52.4	46.7	43.2	38.1	38.1	41.3	38	38.2	36.9
27.05.2021 13:30:23.365	47.5	52.8	46.2	41.5	37.5	39.8	39.2	38	40	37.4
27.05.2021 13:30:24.365	49	54.4	44.7	38.2	37.9	40.1	44.2	43.5	45	43.5
27.05.2021 13:30:25.365	45.4	50.9	47.3	41.2	37.4	38.3	40.1	38.7	41.1	39.8
27.05.2021 13:30:26.365	40.3	42	47.8	40.3	36.6	39.6	39.8	34.2	35.8	34.5
27.05.2021 13:30:27.365	41.4	42.4	49.6	39.3	38.1	38.4	38.5	36.9	37.3	36.5
27.05.2021 13:30:28.365	46	50.4	47.8	37.6	37	37.9	37.6	34.8	35.5	33.6
27.05.2021 13:30:29.365	48.5	51.4	50.4	39.1	38.6	39.1	37	37.5	39.7	39.2
27.05.2021 13:30:30.365	50.3	55	53.5	38.6	38.7	39.3	36.8	35.1	35.2	34.2
27.05.2021 13:30:31.365	45.4	48.3	52.3	39.7	38.7	43	38	35.2	39.3	38.9
27.05.2021 13:30:32.365	46.9	49.7	51.8	40.6	38.6	40.7	37.8	36.8	38.7	39.1
27.05.2021 13:30:33.365	46.2	50	53.1	40.6	38.4	40.8	36.8	37	38.1	38.7
27.05.2021 13:30:34.365	41.2	44.3	54.7	40.4	40.3	40.8	38	36	35.4	32.2
27.05.2021 13:30:35.365	41	41.8	54.7	39.3	38.6	39.8	37.1	35.9	36.8	33.2
27.05.2021 13:30:36.365	53.8	60.9	58.9	42	42.9	41	39.7	43.6	41.8	43.2
27.05.2021 13:30:37.365	47.2	49.6	61.7	41.1	39.1	41.5	40.8	38.2	38	38.5
27.05.2021 13:30:38.365	44.2	47.3	54.6	41.4	40.6	39.9	40.2	40.2	37	35.6
27.05.2021 13:30:39.365	50	52.3	50.2	40.3	39.9	40.2	37.8	37.5	37.6	38.8
27.05.2021 13:30:40.365	50.6	52.8	47.8	40.1	42.1	37.4	38.3	40	40.3	40.5
27.05.2021 13:30:41.365	48.1	54.2	52.7	40.6	43.9	43.3	39.9	38.5	38.2	35.9
27.05.2021 13:30:42.365	51	56	49.9	40.5	43.9	42.5	42.1	39	38.7	41
27.05.2021 13:30:43.365	45.6	48.4	47.7	41.9	43.8	41.9	39.6	38.4	38.8	36.5
27.05.2021 13:30:44.365	43.1	45.7	47.4	41.8	49.5	41.1	40.2	38.7	37.4	37.1
27.05.2021 13:30:45.365	41.9	44.9	45.6	41.9	45.4	38.5	39.3	38.5	36.6	34.5
27.05.2021 13:30:46.365	44.1	46	52.5	41.9	40.5	41	42.7	38.3	38.7	38.1
27.05.2021 13:30:47.365	46.6	48.6	52.3	42.8	40	44.3	39.4	39.4	39.2	36.1
27.05.2021 13:30:48.365	52.8	55	51.2	48.9	45.6	42.8	38.8	40.9	40.2	39

Lfreq 315 Hz (1/3)	Lfreq 400 Hz (1/3)	Lfreq 500 Hz (1/3)	Lfreq 630 Hz (1/3)	Lfreq 800 Hz (1/3)	Lfreq 1 kHz (1/3)	Lfreq 1.25 kHz (1/3)	Lfreq 1.6 kHz (1/3)	Lfreq 2 kHz (1/3)	Lfreq 2.5 kHz (1/3)	Lfreq 3.15 kHz (1/3)
35.4	35.6	37	33.7	33.6	33.5	31.7	32.8	28.4	25.8	21.9
37.4	36.1	39.3	41.7	45.2	44.5	47.6	42.2	40	40.3	36.6
47.8	45.3	39.8	40.3	44.3	53.6	52.5	42.8	38.7	39.3	39.5
42	42.9	43.3	40.7	40.3	43.4	40.7	36.3	35.1	35.1	31.3
51.9	51.2	55.9	52.5	48.3	51.4	44.4	46.7	44.5	42.2	44
37.6	38.7	40.2	42.6	43.1	43.4	37.4	38.4	38.4	37.1	33
38.7	43.8	40	41.9	41.9	41.1	43.8	39	37.1	34.6	34.3
40.5	41.9	42.2	40.9	38.6	37.8	37.2	34.8	34.2	33.3	33.7
38	38.4	42.3	39.8	40	40.8	41.5	40	38.7	38.2	37.2
38	35.1	38.4	38.6	38.3	37.8	36.3	33.1	35	33.5	32.9
40	35.4	37	37.3	36	38	36.7	35.4	35.9	36	34.5
42.9	37	40.6	40.4	38.2	41.2	40.8	37.1	34.7	35.2	34.4
43.4	44	44.7	46.3	45.9	43.5	40.7	37.4	39.2	34.9	34.7
40.4	37.9	41.1	47.6	44.6	39.5	36.2	35.3	39	36	35.9
33.7	38.1	45.9	43.4	42.9	37.2	37.2	37.7	38.9	34.7	31.8
39.2	39.1	43.9	34.1	35.4	37.8	39.3	38.1	35.2	35.7	30.2
34.5	37.5	36.7	36.9	35.1	33.8	31.5	29.5	29	28.4	26.9
38	40	42	37.8	34.8	37.9	36	31.1	27.6	24.7	24
37.8	40.8	40.3	38.6	35.1	33.3	33.5	35.2	35.1	34.7	29.5
36	42.4	41.7	37.1	35.3	33.6	30.3	28.8	30.4	29.7	27.2
39.8	44.5	44	44.8	46.6	45.2	45.6	39.4	41.7	38.8	40.1
38.8	39	38.8	38.2	41.2	41.9	41.3	39.6	40.4	41.6	39.6
33.6	36.5	37.9	36.1	36.6	36.9	37.6	35	35	33.2	28.8
34.2	36.3	34.2	34.7	34.6	32.5	29.8	28.2	26.3	26.6	24.7
35.9	39.7	35.1	36.2	34.6	33.5	34.2	35.1	36.8	36.7	30.4
31.4	33.8	35.5	34.9	34.9	33	31.1	27.9	29.5	26.6	22.2
40.4	34.5	35.7	36.1	37.2	38.1	37.8	39.9	42.5	39.4	38.8
35.2	37.9	37.5	34.8	35.6	37	34.1	29.7	28.2	27.2	25.6
37.3	41	39.1	36.1	36.3	39.3	37.2	32.8	30.3	28.2	22.5
39.2	37.8	39.2	37	36.2	38.6	38.7	34.9	33.8	32.8	27.8
41.5	39.7	42.5	38.9	37.7	37	34.7	35.2	32.5	31.5	27.9
34.1	32.4	35.3	40.2	38.8	35.9	37.3	36.5	36.8	37.6	29.8
40.8	38.8	38.5	39.5	39.8	41.6	38.7	34.5	31.9	29.4	27.7
35.6	33.6	34.3	35.9	36.5	37.6	37.1	36.8	35	36.1	30.8
39.9	36.6	35.4	36.7	37.6	41	35.8	33.2	44.9	48.2	44.8
36.6	33.3	36.9	38.4	34.8	33.9	31.2	31.4	39.1	41.2	38.5
38.2	38.1	41.6	43.4	46.4	43.3	41.4	42.6	39	47.7	47.9
39.8	39.5	41.1	37.5	38.8	39.6	38.6	34.9	35.3	35.5	31.4
46.7	43.3	43	43.8	42.9	45	43.8	40	37.5	37.5	35
51.6	51.9	52.4	48.6	51.3	52.4	47.6	47.5	47.1	42.3	39.6
42.4	37.5	39.3	40	41.3	43.3	43.5	39.1	38.1	32.7	32.7
41.6	40.6	41.6	46.6	47.8	40.3	40.7	39.8	40.9	43.3	39.7
47.4	44.2	45.7	48.8	48.4	44.7	43	43.7	42.1	37	39.3

42.8	43.2	44.7	42.8	38.2	40.8	39.9	37.6	37.4	35.5	32.2
41.1	39.6	40.6	49.8	49.7	49.4	49.8	41.7	40.7	40.9	38.3
37	39.8	40.7	51.9	51.5	39.4	40.5	40.5	45.3	44.7	43.1
38.5	37.7	39.7	48.7	55.5	56.1	47.6	41	49.6	45.5	40.5
37.8	37.8	35.9	39.4	47.5	47.2	42.6	34.8	34.3	34	33.5
40	40	40	39.3	37.9	35.5	33.2	31.1	29.5	26.8	24.1
34.2	33.5	37.7	34.3	36.4	34.6	32.3	31.7	32	28	24
38.7	39.3	43.6	44.9	39.5	38.1	40	33.9	35.4	36.4	33.7
40	38.2	40.3	38	38	37.1	35	32.2	32.7	32.3	27.3
39.4	41.4	39.9	40.8	39	37.7	37.1	39.2	36.4	34.4	29.7
39.6	38	41.9	43.7	39.2	40.3	40.2	34.7	33.1	32.7	31.1
39.9	38.1	36.2	34.3	36.9	37.1	35.4	32.8	32.3	31	29.9
35.2	35.5	34.4	33.5	34.7	34.8	32.3	27.9	27.2	26.3	20.5
38.2	37.2	38.2	36.4	36.3	36.1	33.7	30.1	26.9	24.8	24.9
34.3	33.1	33.8	33.6	34.9	34.4	30.2	27	24.3	23.1	20.1
40.6	40.5	42.9	39.8	40.1	39.6	34.5	33.1	46	41.9	25.2
39.8	40.2	39.4	42.6	48.1	47.8	48.9	42.7	42.4	46.1	41.2
43.5	40	41.5	43.1	42	43.9	44.1	37.1	47.5	43.5	36.9
33.3	32.4	36.4	36.2	36.3	34.6	33.9	32.5	33.6	31.6	26.8
40	38	37.6	36.9	38.4	40.3	37.3	34.5	34.5	33	30.8
34.8	36.7	40.7	42.4	42.8	41.4	38.9	37.1	33.2	32.7	30.1
36.8	33.6	37.5	46.3	38.2	35.4	35.6	32.8	32.6	31.6	28.6
42.2	44.2	40.3	43.4	40.5	41.3	34.8	34.3	35.6	31.2	31
39	41.3	40.8	39.5	36.4	35.1	32.6	30.7	30.2	28.2	25
30.2	30.3	31.8	33.3	34.1	31.7	29.7	26.8	26.6	25.1	22.5
32.7	31.2	33	32.9	34.5	32.6	30.8	29.2	28.7	25.3	24.1
30.1	29.3	30.6	31.7	34.3	32.6	29.7	31.3	42.4	36	21.4
38.1	37.5	36.2	35.2	34.9	37.8	36.3	32.9	37	43.1	38.3
34.1	32.7	32.1	35.3	36.7	34.6	32.4	34	46	43	34.8
39.3	39.9	38.4	38.4	38.4	36.5	33.9	31.1	30.9	27.7	24.7
37.1	37.5	39.5	39.1	39.1	39.6	38.4	34.5	33.3	32.7	29.3
35.5	34.9	38.9	37.2	42.3	38.2	35.9	31.8	31	29.3	26.4
30.6	31.8	31.8	31.7	35.1	33.8	28.5	25.5	24.3	26.4	26.3
30.4	31.1	31.7	33.2	35.7	33.7	28.9	25.8	23.8	21.9	24.2
40.4	37.8	39.4	43.7	47.8	47	48.6	38.9	35.8	34.3	33.4
37.9	35.6	36.6	36.7	38.2	40.1	38	36.1	35.9	35.5	31.9
35.7	33.2	33.8	38.1	37.6	34.8	30.4	30.2	32.6	30.4	27.6
40.1	31.9	34.5	37.8	36.4	35.8	32.6	33	42.9	43.8	41.1
38.8	37.9	38.2	37.5	38.6	35.1	35.1	41.9	45.7	40.1	32.5
33	35.5	35.7	39.6	35.3	32.7	30	29.8	43.2	40.2	28.6
37.7	41.1	41.6	48.5	44.3	38.4	41.5	36.9	33.4	37.3	33.4
35	33.4	32.8	35.7	35.5	33.6	31.5	30.8	30.4	29.4	27.3
33.4	31.3	33.1	34.3	37.4	34.3	30.4	28.5	26.7	23.9	24.6
33	30.8	31.8	33.7	35.8	33.9	30.8	30.7	29.3	28.5	21.5
35.4	32.4	36.3	37.8	36.8	34.9	30.2	31.8	29.6	28.1	30.2
33.9	36.7	36.1	40.5	38.3	35.3	30.8	35.8	35.1	35.4	30.7
34.2	35.6	41.9	40.3	38.8	38.1	32	38.6	41.4	49.3	38.4

33.8	37.3	40.6	37.7	38.7	37.7	35.1	39.8	46.5	46.8	43.3
40.5	39.9	41.6	38.1	39.9	44.1	41.3	38.7	36	38.1	34.3
39.1	43	45.1	50.2	43.8	44.2	42.2	45	39.6	39.8	35
36.9	38.9	41.6	50	44.7	37.9	39.6	38.6	34	37.8	32.2
35.6	35.9	41.2	42.1	38.6	36.2	35.6	32.3	31.1	32.9	30
40.6	41.6	43.9	41.2	40.4	38.1	34.9	34.9	39.7	35.8	33.6
39	39	38.3	41.7	39	37.3	35.3	38.2	41.6	38.6	32.7
41.4	41.5	47.7	41.8	39	39.6	37.2	38.2	41.9	42	35.8
37.7	38.4	47.1	44.9	40.4	41.3	39	41.7	46.2	39.4	35.4
40.3	39.1	48	47.7	41.4	44.9	40.9	40.4	41.4	40.8	41.2
36.5	37.1	47.4	47	40	42.3	39.9	40.2	41.9	40.4	41.2
41.5	40	48.1	46.4	41.8	42	39	39	41.5	39.6	38.7
41.4	39.5	46.1	47.6	46.2	47.1	46.6	42.6	40.5	39.4	37.6
44.9	44.4	48.1	48.2	43.2	47.2	46.4	43	43	42.1	42.7
41.2	42.7	47.6	46.8	42.3	43.9	40.7	40.6	45	44.9	38.7
49.3	51.1	49.3	54	53.5	52.9	44.3	41.1	44.3	46.3	45.9
42.3	38.1	44.1	46.9	39.9	46.6	39.5	40.2	44.8	44.8	38.2
39.4	38.6	48.2	46.6	40.3	37.8	35.2	36.6	37.9	38.6	35.8
45.3	44	45.5	46	42.6	42.6	38.7	37.5	35.7	39.9	38
42.9	49	46.1	46.3	42.4	41.4	41.4	39.9	37.2	38.7	35.6
39.9	40.4	43.8	41.6	43.6	41.8	39.4	38.6	39.6	37	34.3
40.5	38.2	39.9	41.2	46.5	41.3	37.6	37.9	42.4	38.1	33.7
44	40.5	42	47.9	40.5	37.3	35.6	41.1	46.5	46.9	35
43.1	40	38.5	46.8	40.4	42.4	40.6	41	44.2	50.1	49.2
42.9	38.5	44.9	46.6	39.6	40.2	38.6	45.3	46.1	52.2	47.4
36.3	34.3	44.6	46.5	38.4	38.2	36	37.6	38.3	37.6	35.2
40.1	42.3	44.2	46.8	41.5	40.7	40.1	37.7	38.4	37.4	37.2
39.9	41.2	45	45.5	43.1	41.7	39.2	36.4	36.8	37.3	36.7
40	39.9	42.7	46.7	40.2	41.8	40.7	38	36.9	36.7	36.3
42.1	37.5	40.2	46.6	40.7	41	38.4	35.6	35.8	35.6	35.2
39.8	39.9	41.6	45.4	39.6	38.9	36.6	38.6	46.5	46	38.2
40.3	40.4	42	44.2	38.1	36.2	33.8	37.1	41.3	45.7	35.2
35.8	37.8	42.5	43.4	45.2	43.2	47.1	40	34.5	34.8	36.4
35.6	39.6	40.9	41.9	43.5	41.2	40.7	44.4	42.2	43.3	40.4
35.6	37.2	37.6	38.6	37.1	34.9	33.1	29.9	32.2	32.9	31.2
32.3	32.5	34.8	34.5	35.9	33.8	31.8	29.1	28.9	27.3	26.4
36.7	38.4	36.1	35.6	36.2	33.3	30.5	28.8	30.2	26.7	25.1
36.4	34.3	36	35.3	35.9	34.3	30.7	31.6	43.5	46.5	38.4
42.8	40.6	39.2	42.1	43.9	45	48.1	41.6	40	39.5	39.1
38.4	35.1	39.4	43	40.9	39.8	36.3	34.9	37.4	39.2	38.3
35	35.6	36.6	37.9	38.9	35.6	33	33.7	37.4	43.5	35.9

Lfeq 4 kHz (1/3)	Lfeq 5 kHz (1/3)	Lfeq 6.3 kHz (1/3)	Lfeq 8 kHz (1/3)	Lfeq 10 kHz (1/3)
18.5	14.9	11.8	11.4	8.8
32.8	33	32.7	24.8	23.3
37.1	35.7	38.3	35.3	29.6
27.8	26.3	26.7	23.7	19.7
38	37.2	36.9	35.1	32.9
31.2	27.1	22.6	16	13.3
29.5	27.6	23.8	18	15.5
33.6	31.3	21.9	15.4	12.6
36.5	33.2	28.1	25.6	22.4
33.7	30.2	21.4	14.8	10.6
33.9	31.2	23.5	16.3	11.9
33.4	30.5	24.8	20.1	15.6
37.1	28.3	22.9	21	17.2
33.6	33	27.4	22.4	17
28.8	23.2	14.7	13.2	12.4
28.6	27.3	24.5	20.3	17
24.7	21.8	19.8	18.3	14.5
22.3	19.9	16.8	13.5	9.8
25.3	22.8	17.6	14.7	11.2
26	24.5	19.1	14.6	10.4
34.9	34.2	33.4	31.9	29.3
35.2	33.8	31.5	28.9	24.7
25.6	23.3	19.7	16.3	14.3
24.8	21.8	17.4	14	11.2
29.7	25.9	22.2	18	15.2
20.2	17	15.2	14.2	12
32	32	27	22.3	18.2
23.5	24.7	21.5	18.9	17.5
21.6	20.2	16.7	13.5	11.4
25.7	24.2	19.1	16.1	11.6
26.5	26.1	23.8	21.7	16.8
26.8	24.8	18.7	15.2	11.8
26.5	25.1	22.8	20	16.3
27.3	25.9	20.8	16	11.9
28.4	24.8	20.3	18	13.8
29.1	25.5	22.1	13.7	13.9
31.4	27.8	25.7	25.3	17.5
30.1	30.2	23.9	17	15
33.5	30.7	32	25.4	21.4
40.4	39.1	35.1	30.4	29.7
30.5	28.8	24.9	22.8	21.3
37	34.5	29.6	29.3	28.7
33.6	33.9	30.7	29.7	26.1

30.6	26.8	24.6	22.4	20
34.3	31.1	31.1	28.9	25.8
35.7	26.6	23.2	20.8	18
41.2	37.1	34.6	30	27.4
29.8	26.6	20.8	16.5	13.2
22.2	18.6	15.8	13.4	10.6
21.8	18.8	15.7	14.5	12
31.9	25.1	21.5	16.9	13.3
25.5	25.2	21.8	17.7	14.9
32.3	26.5	24.1	20.5	18.2
29.1	20.4	16.3	13.2	10.7
29.4	24.9	20.7	17.3	15.2
18.7	17.8	15.3	12.9	10.2
23.2	21.5	17	14.5	11.6
19.6	18.6	15.3	12.9	10.7
22.3	20.4	19.8	16.4	12.9
36.2	32.8	31.3	26	22.2
36.3	31.8	30.2	25.4	23.1
24.7	22.7	18.6	16.3	13.4
28	26.1	24.7	20.3	17
26.8	24.3	20	16.9	13.2
26.8	23.5	21.2	19.8	14.5
28.3	25.4	20.5	17.6	14.5
23.1	23	19.5	17.9	13
21.2	18.7	16.4	14.1	11.3
24.4	20.4	17.9	15	11.8
21.6	18.8	16.6	14.5	11.8
32.9	22.7	19.5	16.8	13.2
33.5	26.8	24	18.6	15.4
25.2	21.6	16.4	14.2	11.6
27.2	21.7	16.7	14.1	11.4
24.1	18.7	15.8	13.9	11.3
29.8	24.5	14.8	12	10.2
27.1	19.9	13.9	12.3	10.4
31.3	31.5	28	28	21.6
30.2	23.1	18.8	16.8	12.7
31.1	26.4	24.1	20.2	18.2
32.6	27.3	26	24.7	20.5
31.1	25.5	20.1	21.9	16.8
30.2	26.6	26.4	19.5	13.7
30.1	25	21.3	18.7	14
36.3	39.8	30	15.5	12.9
32.3	29.6	23.7	14	11.3
21.2	16.3	13.2	12.3	10.4
31.6	23.1	21.1	14.5	12.2
29.3	35.9	23	16.2	13.3
32.8	33.6	27.5	18.6	14.6

31.3	29	25.3	24	23.1
29.9	24	20.1	16.7	15
38.8	46.2	28	21.3	19.1
31.6	29	28	20.9	16
24.6	26	21.7	21.9	19.6
34.6	28.4	24.8	22	20.4
33	28	23.4	17.2	11
36.7	42.1	31.4	19.1	13.9
33.8	31.7	27.8	14.8	12.3
37.8	33.7	25.7	23.8	13.6
40	41.1	33.7	16.5	10.8
37.3	34.8	26.3	17.1	13.9
38.6	34.3	28.5	24.6	21.2
43.3	39.6	37.4	33.7	27.3
37.8	33.6	26.9	21.1	18.4
42.6	41.8	38.7	34.9	33.8
38.8	34.9	29.7	24.8	21
32.1	27.6	21.6	16	13
32.3	26.6	23.7	20.3	15.6
32	27.5	22.8	20.2	17.3
31.2	25.6	21.7	20.5	15.7
32.6	29.3	24.5	23.6	21.6
30.1	25.2	21.7	21.1	19.2
34.9	30.8	25	20.3	17.1
35.9	29.5	23.8	24.5	15.4
35.5	32.9	21.7	17.5	15.4
35.7	32.6	23.9	17.9	14.4
36.5	31.5	22.9	16.8	13.1
35.9	31.5	23.3	16.8	13.7
35.4	30.7	23.3	14.5	11.2
38.6	33.6	23.8	15.9	11.6
32.3	30	30.2	26.2	11.9
32.8	31	31.5	30.8	26.9
36.8	34.7	32	28.4	25.2
27	26.4	19.4	18	13.8
23.6	24.6	17.5	13	10.8
24.2	23	19.8	16.6	12.5
24.5	22.1	18	14.8	12.3
39.5	40.7	33.3	29.9	26.3
32.3	38.4	26.3	18.7	15.9
31.9	30.7	29.5	23.4	19.7

Position 03 Data

	L _{Aeq}	L _F max	L _{feq} 50 Hz (1/3)	L _{feq} 63 Hz (1/3)	L _{feq} 80 Hz (1/3)	L _{feq} 100 Hz (1/3)	L _{feq} 125 Hz (1/3)	L _{feq} 160 Hz (1/3)	
27.05.2021 14:10:04.360	44	44.7	50.6		46.2	44.9	45.9	48.3	45.3
27.05.2021 14:10:05.360	44.7	46.5	46		46.9	42.6	47.6	48.6	45.3
27.05.2021 14:10:06.360	48.4	52.8	47.3		45.6	43.2	45.8	48.6	45.1
27.05.2021 14:10:07.360	45.2	49	46.3		46	40.7	46.2	49.2	46
27.05.2021 14:10:08.360	49.4	56.2	47		42.2	42	46.4	49.1	45.5
27.05.2021 14:10:09.360	44.7	47.2	47.8		43.9	41.8	44.8	46.3	45.1
27.05.2021 14:10:10.360	46.4	49.4	48		44.2	46	44.3	46.9	45.5
27.05.2021 14:10:11.360	45.9	48.9	43.8		45.1	45.5	45	46.4	43.1
27.05.2021 14:10:12.360	45.8	48.5	42.2		43.7	44.8	44.9	43	42.9
27.05.2021 14:10:13.360	42.8	44.6	51.9		45.5	45.3	43	44.5	44.3
27.05.2021 14:10:14.360	42.6	47	57.1		46.1	43.8	43.5	44	42.2
27.05.2021 14:10:15.360	42.5	44	50.3		45.2	43.2	42.9	42.9	40.3
27.05.2021 14:10:16.360	43.3	45.3	51.4		46.2	41.5	46.5	41.1	39.1
27.05.2021 14:10:17.360	46.9	53.3	48.5		48	42.7	45.3	38.9	40.1
27.05.2021 14:10:18.360	48.8	54.6	44.3		47.1	42.2	38.3	39.2	41.1
27.05.2021 14:10:19.360	43.4	47	44.3		42.4	38	37.8	38.5	39.9
27.05.2021 14:10:20.360	48.3	54.5	53.9		55.6	49.9	46.4	43.9	42
27.05.2021 14:10:21.360	43.3	45.4	47.4		43.3	39.3	40.8	37.9	38.1
27.05.2021 14:10:22.360	47.3	53.7	45.6		46.2	39.1	39.9	39.5	41.8
27.05.2021 14:10:23.360	45	46.9	44.8		43.2	40.8	40.3	40.8	43
27.05.2021 14:10:24.360	51.7	58.3	46.9		42.1	41.4	41.8	39	39.1
27.05.2021 14:10:25.360	47.1	51.4	44.9		45.8	39	38.3	41.9	40.5
27.05.2021 14:10:26.360	43.6	46.5	43.7		42.6	41.1	37.9	38.7	37.4
27.05.2021 14:10:27.360	47.2	50.2	47.8		42.5	40.8	39.7	38.2	38.9
27.05.2021 14:10:28.360	45.9	48.1	45.3		42.3	41.1	39.1	38.4	39.3
27.05.2021 14:10:29.360	46.6	49.2	45.8		44.5	40.3	38.8	38.7	36
27.05.2021 14:10:30.360	45	47.1	46.3		44.6	41.6	40.1	39.6	40.2
27.05.2021 14:10:31.360	43.7	45.9	45.4		41.9	40.1	39.4	38.6	37.6
27.05.2021 14:10:32.360	47.7	49.9	50		40.3	38.7	38.5	39.2	38.7
27.05.2021 14:10:33.360	46.8	51.1	53.4		41.7	39.6	38.8	38.9	37.2
27.05.2021 14:10:34.360	48.4	55	57.6		41.5	40.5	38.8	40	38.3
27.05.2021 14:10:35.360	47.4	52	51.4		42.2	37.7	39.1	38.1	40.3
27.05.2021 14:10:36.360	42.9	46.5	44.7		41	39.8	38.5	38.3	39.1
27.05.2021 14:10:37.360	43	46.2	42.7		41.1	40.1	41.5	37.7	38.7
27.05.2021 14:10:38.360	44.4	46.8	46.9		44.3	42.2	40	39.6	35.9
27.05.2021 14:10:39.360	46.5	49.9	53.5		42.9	42.2	41.8	40.6	37.4
27.05.2021 14:10:40.360	43.5	46.7	50.3		48.5	40.5	39.6	41.7	37.9
27.05.2021 14:10:41.360	43.5	44.9	46.3		44.8	44.5	43.7	39.9	37.8
27.05.2021 14:10:42.360	44.4	45.4	52.2		45.5	46	41.4	41.7	40.9
27.05.2021 14:10:43.360	46	51.4	59.4		42.3	44.7	42.2	43.7	41.8
27.05.2021 14:10:44.360	41.5	42.3	59.1		42	42.7	42.8	42.8	43.4
27.05.2021 14:10:45.360	44.7	47.8	52.8		43.3	41.8	40.7	43.7	43.9
27.05.2021 14:10:46.360	48.4	53.7	52.6		42.6	42.6	43	42.4	44.2

27.05.2021 14:10:47.360	46.7	52.2	53.2	40.6	41.5	42.6	43.2	43.1
27.05.2021 14:10:48.360	46.7	51.6	49.1	41.7	41.2	42.3	43.5	44.1
27.05.2021 14:10:49.360	46.1	48.2	48.8	41.7	40.2	43.2	42.9	43
27.05.2021 14:10:50.360	49.6	54.1	46.3	39.3	40.9	42.4	39.7	42.2
27.05.2021 14:10:51.360	45.2	46.5	53.6	42.4	40.4	41.3	38.2	38.8
27.05.2021 14:10:52.360	50.9	53.4	51.2	44	47.8	42	38.2	37
27.05.2021 14:10:53.360	48.3	51	47.7	41.8	40.2	40.6	36.8	36.6
27.05.2021 14:10:54.360	46.7	50.2	47.1	43.4	42.6	41.4	38.5	37.5
27.05.2021 14:10:55.360	42.4	44.8	51.8	44.4	45.1	44.8	39.6	39.2
27.05.2021 14:10:56.360	43.7	44.8	49.4	50.5	48	43.8	38.6	39
27.05.2021 14:10:57.360	48	51.6	45.1	50	48.2	49.2	42.7	44.2
27.05.2021 14:10:58.360	47.8	51.2	44.5	50.2	51	49.8	42.3	41.9
27.05.2021 14:10:59.360	43	43.6	45.6	53.5	51.1	52.3	41.2	40.3
27.05.2021 14:11:00.360	45	46.5	44.8	55.8	52	54.7	45	45.5
27.05.2021 14:11:01.360	45.1	47.8	45	53.2	52.6	51.1	44.4	44.3
27.05.2021 14:11:02.360	42.7	44.7	44.5	42.5	39	42.3	38.7	40
27.05.2021 14:11:03.360	45.2	46.1	48.9	43.2	39.8	40	39.4	40.2
27.05.2021 14:11:04.360	50.1	54.3	46.2	44.6	40.1	39.7	40.3	40.9
27.05.2021 14:11:05.360	43.5	49.9	46.9	44.9	45.9	45.1	44.1	40.7
27.05.2021 14:11:06.360	42.6	45.7	47	44.3	47.5	40.8	43.4	39.2
27.05.2021 14:11:07.360	44.3	47.3	48.4	41.2	46.9	39.2	39	41.5
27.05.2021 14:11:08.360	46.5	52	47.3	48.7	47	41.7	40.6	40.9
27.05.2021 14:11:09.360	42.9	47.6	42.9	48.5	43.6	42.2	40.4	38
27.05.2021 14:11:10.360	49.7	56.2	47.3	50.4	41.4	38.2	38.2	40.1
27.05.2021 14:11:11.360	45.9	49.2	46.3	45.5	41.5	40.2	38.7	40.5
27.05.2021 14:11:12.360	44.4	46.2	47.7	46.7	39.3	41.9	38.6	39.3
27.05.2021 14:11:13.360	45.2	47.8	50.3	46.7	43	43	39.8	40.7
27.05.2021 14:11:14.360	45.7	49.2	44.9	47.6	40.6	40.7	39.6	40.8
27.05.2021 14:11:15.360	48.8	54.8	48	46.5	40.8	41.9	42.1	41.8
27.05.2021 14:11:16.360	52.8	60.6	51	48.6	42.9	43.3	40.1	41.4
27.05.2021 14:11:17.360	44.9	58.5	51	42.6	39.9	44	36.9	39.7
27.05.2021 14:11:18.360	50.3	54.4	47.6	44.2	41.3	42.9	39.1	41.8
27.05.2021 14:11:19.360	52.8	56.8	48.7	43	40.4	41.5	39.1	38.9
27.05.2021 14:11:20.360	44.9	55.8	51.9	45.4	41.2	40	40	40.7
27.05.2021 14:11:21.360	44.6	48.9	49.5	45.5	39.8	42	38.6	38.1
27.05.2021 14:11:22.360	39.9	41.5	52.1	47.8	39.8	40.7	36.3	36.5
27.05.2021 14:11:23.360	42.8	45.2	51.1	45	43.9	43.1	41.3	40.8
27.05.2021 14:11:24.360	44.9	46.8	51.8	53.2	42.8	45.3	47.9	41.4
27.05.2021 14:11:25.360	45.4	47.4	48.3	47.8	41	48.1	45.5	39.8
27.05.2021 14:11:26.360	48.4	50.5	51.8	54.6	48.7	47.4	44.6	42.7
27.05.2021 14:11:27.360	47.9	51.1	52.8	48.5	40.1	42.2	45.3	42.6
27.05.2021 14:11:28.360	43.4	45.2	50	45.1	40.5	44.8	41.7	38
27.05.2021 14:11:29.360	45.3	49.5	49.7	45.1	45.3	43.8	40.2	38.1
27.05.2021 14:11:30.360	44.8	49.1	50.9	42.8	44.4	45.7	40.7	40.6
27.05.2021 14:11:31.360	43.1	43.9	48.6	44.1	44.1	51.1	43.4	40.9
27.05.2021 14:11:32.360	44.8	47.5	47.5	46.5	47.6	45	45.2	38.6
27.05.2021 14:11:33.360	43.1	45.6	48.5	48.4	50.2	43.6	43.9	37.5

27.05.2021 14:11:34.360	42.3	44.5	48.8	48	45.6	40.3	41.8	39.7
27.05.2021 14:11:35.360	42.5	44.3	48.6	47	42.6	40.7	40.3	38.9
27.05.2021 14:11:36.360	46.1	50.7	43	46.2	43.5	40.3	41.6	38.3
27.05.2021 14:11:37.360	44.8	48.4	52.4	45.7	45.7	45	41.5	38.1
27.05.2021 14:11:38.360	48.1	52.5	54.3	48.2	45.1	45.9	41.4	41.3
27.05.2021 14:11:39.360	52.4	59.8	50.8	47.6	44.3	44.4	42.9	44.7
27.05.2021 14:11:40.360	47	54.1	46.4	48.1	42.4	43.1	41.7	43.3
27.05.2021 14:11:41.360	48.1	52.5	47.1	48.3	41.9	41.3	41.3	41.8
27.05.2021 14:11:42.360	45.1	47.7	48.1	47.1	40.4	40	40.4	40.2
27.05.2021 14:11:43.360	46.7	49.7	47.3	49.6	40.8	40.6	41.3	39.9
27.05.2021 14:11:44.360	47.8	51.8	45.8	48.2	42	39.6	41	39.8
27.05.2021 14:11:45.360	48.1	51.9	49	47.2	42.1	42.1	40.9	40.6
27.05.2021 14:11:46.360	46.9	49.2	47.7	46.1	44	43.3	40.1	40.6
27.05.2021 14:11:47.360	52	57.5	50	45.5	41.5	43.4	40.7	44.6
27.05.2021 14:11:48.360	45.8	49.1	46.8	47.4	42.2	43.2	43.7	42.8
27.05.2021 14:11:49.360	45	49.1	47.9	46.5	44.1	43	41.5	39.9
27.05.2021 14:11:50.360	49.7	53.8	48.6	48.2	45	39.7	39.4	37.5
27.05.2021 14:11:51.360	44.9	47.9	47.3	45.8	46.6	39.6	37.3	40.3
27.05.2021 14:11:52.360	46	49	49.6	48.2	44.8	43.6	38.1	42.1
27.05.2021 14:11:53.360	46.3	49.7	49.2	44.2	41.4	40.8	37.3	38.8
27.05.2021 14:11:54.360	47.6	52.5	48.7	43.5	43.3	40.7	37.5	36.9
27.05.2021 14:11:55.360	45.5	51.5	50.3	44.1	40.4	40.1	39.4	38.1
27.05.2021 14:11:56.360	43.1	47.5	44.5	40.1	41.4	39.6	38.4	37.4
27.05.2021 14:11:57.360	40.3	42.8	47.1	40.5	43.6	40.2	36.6	37.9
27.05.2021 14:11:58.360	40.4	42.1	52.9	43.4	42.9	43.2	37.9	36.1
27.05.2021 14:11:59.360	42.5	48.4	54.5	44	42.8	43	37.4	36.9
27.05.2021 14:12:00.360	47.5	52.1	49.6	49.1	40.1	42.2	40	38
27.05.2021 14:12:01.360	45.6	50.2	51.4	50.6	43.5	38.3	38.8	37.7
27.05.2021 14:12:02.360	42	43.7	48.4	45.1	44.9	39.5	35.4	38.1
27.05.2021 14:12:03.360	41.3	45.5	47.3	45.8	40.9	39.9	39.5	37.3
27.05.2021 14:12:04.360	44.5	48.6	50.6	43.4	42.9	41	38.4	39.3
27.05.2021 14:12:05.360	44	45.2	50.6	44.6	45.4	40.1	38.4	40.4
27.05.2021 14:12:06.360	47.1	50.7	53.9	46.1	42.9	43.7	38.7	39
27.05.2021 14:12:07.360	45.3	47.3	53.7	46.2	42	40.3	38.4	37.9
27.05.2021 14:12:08.360	45.5	47.5	49.4	43.5	41.8	40.7	39.9	38.4
27.05.2021 14:12:09.360	43.8	44.5	53.9	45.4	41.3	38.3	39.5	40.6
27.05.2021 14:12:10.360	46.5	52	49.9	45.1	40.4	41.4	39.3	41.8
27.05.2021 14:12:11.360	46.9	51	49	43.7	41.6	41.2	40.7	38.9
27.05.2021 14:12:12.360	48.2	53.1	49.1	43.9	42.2	42.1	40	39.7
27.05.2021 14:12:13.360	46.1	48	48.5	44.1	43.6	41	39.6	39.7
27.05.2021 14:12:14.360	48.7	55.6	50.3	42.8	42.9	41.9	40.6	40.3
27.05.2021 14:12:15.360	46.4	54	53.8	44.6	43.6	44	44	44.8
27.05.2021 14:12:16.360	50.8	57.9	50.2	44.3	42.7	45.4	42.6	44.2
27.05.2021 14:12:17.360	45.2	48	48.1	45	44.1	43.8	43.1	42.1
27.05.2021 14:12:18.360	46.6	51.4	50.4	46.8	44.1	43.9	42.1	41.1
27.05.2021 14:12:19.360	52.8							

Lfreq 200 Hz (1/3)	Lfreq 250 Hz (1/3)	Lfreq 315 Hz (1/3)	Lfreq 400 Hz (1/3)	Lfreq 500 Hz (1/3)	Lfreq 630 Hz (1/3)	Lfreq 800 Hz (1/3)	Lfreq 1 kHz (1/3)
43.2	39.5	36.8	36.4	34.4	32.9	36.1	35.9
43.9	40.1	35.4	35.2	35.9	34.4	36.5	36
43.8	40.7	38.7	39.9	39.2	34.5	37.4	38.3
43.3	40.2	36.1	35.7	36.9	35.2	36.6	35.8
45.5	41.7	36	36.3	36.6	36.7	39.6	45.2
44.3	39.8	36.2	38.1	37.4	35.1	36	35.6
41.5	40	36.4	38.3	39.7	35.7	39.4	37.1
41.9	38.8	33.9	31.8	34.9	32.5	36.2	36.1
40.7	37.1	34.1	33.9	35.5	32.2	35.2	36.1
40.1	35.3	34.5	32.2	37	31.3	32.6	33.4
38.3	35.5	34.5	37.1	37	32.1	34.1	32.8
36.5	33.7	29.4	29.9	36.5	30	31.3	32.3
36.8	35	33.7	34.8	35.5	30.5	33.2	32.8
41.2	38.7	37.6	37.7	39.3	37.4	39.3	41.6
40.2	39	39.4	39.8	36.4	35.6	37.5	39.8
38	36.5	35.5	34.8	35	32.8	34.7	35.9
42.3	41	40	39.6	39.4	36.9	36.1	36.7
36.9	35.1	34.7	34.9	32	31.8	35	34.9
42	41.3	39	39	39.6	37.4	39.2	39.9
40	37.9	34.8	34.7	33.6	35.8	35.8	38.3
39	39.8	36.9	38.1	34.4	32.8	33.4	37.1
35.7	34.1	33.8	33.8	35.9	34.2	33.8	35.1
37.1	36.3	32	36.2	38.5	33.6	36.5	34.9
37.3	35.6	33.4	35.2	40.8	36.9	38.3	36.4
39.8	39.5	36.8	41.6	42.5	37.3	35.8	36.5
35.9	34.9	31.2	38.6	43.3	34.6	35.2	35.6
40.6	36.6	34.2	33.1	34.4	35.4	34.4	35.2
36.6	34.3	32.4	31.2	31.8	30.8	33.9	34.8
35.9	34.6	33.6	31.5	32.7	33.1	34.3	35.5
35	33.9	31.2	31.1	31.7	32.5	34.4	34.4
39	37.8	37.4	39.7	38	33.9	37.6	42.8
41.2	42.6	38.9	42.7	43.5	37.5	35.5	36.2
37.4	35.5	32.2	30.7	33.2	34	35.7	36.1
37.3	36.7	33.6	33.1	32.1	31.5	35.4	37
36.1	35.3	31.9	37.8	34.3	33.6	35.4	35
36.7	35.5	32.3	36.9	32	31.5	34	36.2
37.8	36.2	32.6	32.8	32.4	33.2	34.2	36.6
36.6	34	30	31.9	31.7	32.3	33.6	34.3
38.4	33.9	31.9	30.5	31.7	31.8	33.6	34.6
38.7	34.9	31	36.6	34.4	31.7	34.5	34.3
42.1	36.5	32	29.5	30.5	31.2	33.8	34
40.9	36.2	33.4	37.2	31.4	32.6	34.5	34.8
43.2	40.2	34.8	32.8	34.6	36.3	39	39.6

41.8	39.8	36.6	34.2	32.3	33.8	36.8	37.7
44.4	44.1	39.8	38.9	35.5	37.3	37.3	38.6
42.6	41.4	37.3	36.9	37.8	38	38.9	38.9
42.5	41.4	39.9	39.9	45.1	39.2	41.2	41.2
40.3	39.4	36.3	36.8	38.2	38	39.2	39.2
37.5	38.5	41.4	39.6	46.9	44.4	46.4	46.4
36.5	37.4	36.9	37.7	43.7	38	37.9	37.9
38.2	35.8	33.8	34	37	38.1	35.9	35.9
36.6	34.4	31.7	31	33.1	35.4	35.6	35.6
37.5	35.7	32.5	31.9	31.7	35.5	35.5	35.5
38.8	35.5	38.4	39.2	40.1	35.6	35.5	35.5
38	36.2	34.6	37.7	38.1	36.6	37.2	37.2
37.4	35.4	32.2	30.3	31.1	35.1	35.5	35.5
40	39.3	35.7	36.5	36.4	35.8	37.7	37.7
40.5	37.8	36.3	34.6	37.7	36.9	37.8	37.8
37.9	35.3	31.2	31.2	34.5	34.7	34.7	34.7
39.8	39.4	36.1	34.6	35.9	34.6	35.6	35.6
39.1	37.6	36.3	37.8	37.6	35	35.8	35.8
40.8	39.4	38.1	36.7	37.3	35.6	34.7	34.7
37.9	36.6	33.4	32.7	33.6	33.8	34.3	34.3
40	37.3	35.8	37.2	36.6	35.1	35.1	35.1
38.4	36	31.9	31.4	34	36.1	41.2	41.2
37.6	35.9	33.5	35.5	33.3	35.8	36.3	36.3
41.6	41.8	38.9	42.4	41.4	35.2	37.3	37.3
39.9	38.9	36.9	36.8	40.8	35.6	35.9	35.9
40.2	35.9	37.8	41.7	37.8	34.2	35.2	35.2
38.3	35.6	34.6	36.2	40.8	36.1	37.2	37.2
39.2	37.3	33.4	33.2	35.1	33.5	34.6	34.6
42.2	39.9	38.5	37.1	38.3	38	42.9	42.9
41.7	40.1	37.2	39.3	36.6	41.6	47.7	47.7
37.6	35	32.7	33.1	35.2	37.1	37.5	37.5
40.7	41.7	41.5	46.1	42.6	39.2	39.2	39.2
39.6	37.4	35.7	36.4	50.3	39.8	44.9	44.9
36.8	35.1	36.6	33.5	43.5	33.7	35.9	35.9
36.4	35	34.5	30.5	31.3	33.1	33.5	33.5
34.8	32.3	31.6	30	30.3	32.7	33.3	33.3
37	35.2	34.3	32.9	31.2	33.8	34.7	34.7
39.5	39.4	37.2	37.2	34.8	35.8	36.1	36.1
38.9	39.2	36.9	37.6	35.3	37.1	36.5	36.5
40.1	39.5	39.4	39.5	38.1	37	38.1	38.1
40.2	39.4	37.7	39.6	39.6	35.7	36	36
38.9	35.7	32.7	36.3	32.9	36.1	36.4	36.4
38.9	37.9	36.2	36.1	35.8	32.7	37.2	37.2
41	37.5	37.1	37.8	36.5	33	37.4	37.4
39.7	35.9	33.1	33.3	31.9	35.5	35.1	35.1
38.1	36.2	34.3	33.1	33.9	35.5	36.8	36.8
37.4	35.7	31.7	30.9	32.2	35.1	35.6	35.6

37.4	35.2	34.5	35.4	34	32.1	34.5	34.1
36.6	35.5	32.2	32.5	33.6	33.5	35	34.7
39.4	37.4	33.5	36.2	33.3	33.7	35.1	34.6
39.5	37.2	33.5	33.4	32.4	31.9	34.9	35
42	38.7	34.8	38.1	36.8	36.3	37.3	42.2
46.9	47.8	42.3	41.6	41.9	40	40.8	48.6
41.5	40.2	39.2	36.8	43.5	39	37.1	37
43.4	40.2	38.2	40.1	44.7	40.9	38.3	38.8
40.5	39.4	35.8	36.1	40.4	35.8	36.3	37.9
38.7	38.5	34.8	35.4	39.2	36.5	35.8	36.9
39.1	36.3	36	37.9	45.2	38.2	36.9	38.5
39.2	36.6	33.8	36.5	41.3	36.7	37.9	37.1
39.3	39.8	33.5	39.6	43.8	36.1	37.3	38
46.4	47	42.5	47.2	46.2	44	40.1	46.2
43.1	41.4	37.5	40.1	40	37.7	36.7	37.8
39.9	37.4	34.1	36.7	41	37.5	35.8	36.9
39.1	38.5	34.6	37.1	43	42.6	36.6	36.8
37.3	36.4	34.6	37.5	40.7	36.4	36.2	34.7
42.8	38.3	32.9	35.2	36.8	34.6	40.2	37.4
42	39.2	33.3	33.4	31.4	37.5	40.5	40.5
35.2	33.2	32.7	33.4	35.2	37.1	34.4	33.8
37.7	36.9	33.4	34.4	39	33.3	33.9	33.7
36.6	36.3	31.8	33.8	42.1	32.7	33.9	33.5
34.3	32.9	31.3	31.5	33.7	30.5	33.4	33.1
33.2	32.6	31.6	29.7	34.4	29.2	32.6	33
36	33.2	31.2	31.3	31.5	30.8	33.7	36.1
36.6	36.9	34.9	34.6	35.5	30.5	33.7	34.2
35.8	34.5	34.5	35.1	33.6	32.6	34.4	34.8
34.6	33.7	30.6	30.3	30.1	29.5	33.5	33.3
35.3	34.6	32.4	32.1	32.2	31.2	35	32.7
39.5	38.5	36.6	39.1	37.5	34.3	36.9	35.9
39.6	38.8	35.8	37.5	34.7	34.2	36.3	36.3
37.6	36	34.8	33.7	41	32.1	35.6	33.4
36.7	36.9	32.6	33.8	35.3	31.7	34.7	34.7
36.9	36.5	33.3	34.5	44.1	34.6	36.7	39.2
36.3	36.3	34.8	33.2	33.2	32.4	37.6	38.4
41	38.8	35.3	34	34	34.6	38.5	41.7
39.2	38.3	35.4	34.9	33.8	33.6	37.6	38.7
43.1	42.7	39.5	42.3	37.4	37	37.4	38.6
39.6	39.1	35.3	33	37	34.1	35.9	37.7
41.7	42.2	39.1	38.8	42.1	42.5	37	40.5
43.7	42	36.4	35.3	36.1	38.2	37.3	39.8
45.6	44.1	41.5	44.8	43.9	39.8	43.2	45.3
40.8	40.6	36.1	36.1	35.9	35.7	36.8	38.2
40.2	38.7	36.1	37.4	39.1	36	36.7	38.6

Lfreq 1.25 kHz (1/3)	Lfreq 1.6 kHz (1/3)	Lfreq 2 kHz (1/3)	Lfreq 2.5 kHz (1/3)	Lfreq 3.15 kHz (1/3)	Lfreq 4 kHz (1/3)	Lfreq 5 kHz (1/3)	Lfreq 6.3 kHz (1/3)
33.2	31	30.2	26.3	22.4	19	14.4	12.1
34.1	32.5	30.2	29.8	24.5	24	24.3	20
34.2	33.5	42.2	38.4	31.2	30.5	26.6	22.9
34.3	31.9	32.5	31.3	28.4	26.5	24.5	15
39	37.6	34.7	34.7	33	31.3	26.5	25.8
33.9	30.7	30.7	30.4	25.2	22.5	19	16.1
37.6	35.8	31.2	29.7	26.6	25.2	23	24.3
32.1	31.7	39.6	36.2	24.4	26	27	19.9
35.8	35.5	38.8	33.1	25.9	27.4	25.4	22.4
31.6	28.9	30.4	30.9	27.2	23.8	23.4	15.4
31	26.8	27.3	27.1	26.6	27.3	25	20.8
30.6	29.8	34	33.9	23.6	21.4	20.2	14.9
31.5	31.8	31.3	29.3	25.6	24.3	25.8	17.9
38.9	32.7	30	29.6	27.5	28.5	26.1	21.8
41.4	37.1	38.6	39.8	30.2	29.9	29.5	21.4
34.5	31	29.9	27.1	27.2	28.8	24.9	23.6
39.6	37.8	37.6	38.3	33.4	30.2	28.5	26.6
34	31.3	32.9	32.2	26.2	24.8	23.2	16.4
33.4	32.9	37.4	33.9	31.1	32	30.1	26.4
34.2	30.1	36.5	32.4	26.1	22.7	21.4	17.1
33.8	48.9	41.9	39.7	27.2	32.1	22.4	20.9
36.9	38.5	40.6	37.4	30.3	26.2	21.9	16
34.3	29.9	27.7	26.4	24.4	26.8	29.2	18.1
37.1	40.3	36.8	30.7	28.2	25	25	19.3
34	32	34.3	28.7	26.5	26.9	29.5	19.2
33.9	35.6	37.3	36.1	29.8	27.4	25.1	25.1
33.9	33.7	35	34.9	29.7	29.8	31	25
34	33.1	30.1	26.3	26	34.7	34.2	24.2
33.8	32.5	40.9	35.5	30	38.5	39.3	34
32.8	30.3	29.2	25.6	31.7	41	41.1	31.8
38.1	38.8	38.7	31.2	29.5	33.6	28.1	20.8
35.5	33.9	34.2	32.1	30.3	34.6	31.9	22.5
33.3	30.9	29.7	27	24.4	29.4	27.8	17.5
33.4	30.7	30.2	26.8	23.2	26.6	24.7	16.4
35.5	34.5	33.3	32.3	29.1	27.2	23.1	18.7
33.3	32.7	42.4	33	31	23.3	21	17.8
33.6	30.2	28.6	34.6	28.5	25.5	19.1	15.4
32	31.6	33.4	34.3	31.8	25.7	26.3	20.5
31.8	32.6	34.7	36.7	33.4	25.1	26.3	20.3
33.3	30.1	29.8	40	38.1	21.5	17.4	12.9
30.5	27.5	24.6	22.6	23.8	23.1	18.1	12.6
31.3	31.4	38.7	33.3	25.4	21.2	17.6	15.4
39.1	35.5	39.4	39.5	34.7	29.6	25	26

34	32.3	31.5	41.8	29.3	25.8	19.6	16.9
37.3	36.2	32.1	29.9	30.1	30.3	29.7	25.1
35.9	33.9	32.1	31.4	27	24.7	19.9	14.2
40.5	39	34	32.6	28.7	26	21.5	17.1
35	33.1	31.3	28	23.6	21.2	19.1	17.4
40	32.4	32.3	30.7	28.9	26.9	25.3	18.6
33.4	34.3	42.8	35.7	27.6	25.1	22	21.6
32	31.4	39.9	39.2	25.6	24.5	23.6	15
31.6	29.5	26.8	25.9	21.8	23.1	31.2	14.5
32.3	29.7	34.4	31.6	28.4	29.5	27.4	18.5
33.8	35.1	42.7	38.4	24.8	22.4	17.6	13.9
36.3	32.1	40.3	41.1	24.9	21.5	20.3	16.2
32.7	29.4	26.5	23.1	23.2	27.7	27	24.1
34.5	30.8	29.1	25.2	21.8	25.1	20.9	21.7
35	32.1	31.8	27.5	24.9	25.3	24.8	19.1
33	29.5	32	29.3	23.6	22.6	22.4	15.7
34.5	31	37.1	35.2	31.2	25.4	25.6	20.5
31.4	32.1	45.1	44.8	29.1	20.2	17.4	14.7
30.8	27.6	30.1	28.1	21.9	19.8	27.9	13.7
31.3	30.1	30.7	30.3	25.6	26.4	27.2	23.5
30.5	29.6	36.6	31.3	26	22.6	22.4	18
36.5	31.9	35.1	37.5	29.2	26.1	27	21.8
32.3	28.8	28.6	30.1	22.3	23.9	20.3	17.6
39.5	40.9	40.8	39.9	34.2	34.6	28.9	26.6
32.8	36.9	36	35.4	26.5	23.2	26.6	15.7
32.2	33.1	32.2	30	24.5	23.2	22.4	18.3
36.5	34	29.4	27.9	25.7	23.2	18.9	17
31.3	31	35.6	40.7	26.2	25.8	30.5	19.6
34.5	35.7	39.9	35.7	30.6	32.6	36.5	30.2
47.5	37.5	40.1	36.4	30.5	33.5	39.9	32.1
37.2	30.7	29.1	27.1	24.8	27.7	34.4	29.8
41.1	42.2	37.4	39.8	32.1	30.7	30.3	25.6
42.4	36.3	36.9	38.3	37.2	35.9	29.4	26.1
32.2	28.8	35	32.9	25	25.7	16.2	11.5
30.8	27.9	40.5	31	30.1	27.5	19.5	13.5
30.2	26.8	24.4	21.4	19	21.1	20.8	13.6
33.2	32.2	30.2	28.7	23.4	25.6	31.3	20.1
34.9	33.3	34.2	28.7	22.9	23.8	29.4	23
35	33.9	34.1	33.4	26.9	26.2	26.3	17.7
38.1	36.6	39.5	40.6	32.1	27.1	28.4	21.3
34.6	34.2	42.3	34.9	33.7	32.9	32.2	23
33	31.3	28.1	23.5	21.2	28.5	30.4	20.9
34.2	31.2	30.1	32	32.7	34.2	34.7	24.4
34.8	31.9	31.8	29.4	26.5	28.8	27.4	20.9
31.7	29.4	30.3	30	22.9	25.2	26.2	18.3
33.4	30.7	34.5	35.8	28.3	29.4	27.7	18.2
32.5	28.9	33.4	27.2	25.9	27.9	25.6	19.3

31.5	29.1	27.6	26.3	28.6	26.5	21.5	14.1
32	30.2	31.6	27.8	27.1	22.6	19.4	15
36.5	35.5	30.4	39.2	36	22.4	19.9	19.8
33	31.2	39.5	33	21.6	21.8	23.7	13.3
39.6	34.3	36	37.7	31.9	29.4	27.2	25.5
43	40.4	36.3	34.5	33.1	31.3	28.1	26.6
36.4	34.4	33.9	32.2	28.9	29.6	27.5	21.3
37.1	36.1	34.7	33.6	28.4	31	29.8	21.9
34.8	32.4	29.5	30.1	27.8	25.9	23.1	17.5
38.8	37.1	37.8	31.3	28.7	26.8	24.7	27.1
36.2	33.1	40.1	29.6	24.8	24.5	20.3	13.9
36.8	35	40.9	38.6	33.8	26.3	26.1	20.6
34.5	33.5	38.3	30.6	25.9	23.9	23.7	20.4
39.5	34.4	39.4	36.9	29.8	29.4	28.4	25
34.2	32.7	34.2	29.7	24.8	24.9	19	17.4
34.2	31.5	32.7	27.6	23.2	24.6	19.1	16.7
35.4	37.8	44.6	37.7	27.5	27.1	18.6	15.4
32.8	31.4	35.6	31.4	25.6	24	19.3	11.9
32.8	33.6	36.2	35	26.4	23.1	19.6	13.4
36.7	32.6	33.1	29.1	26.4	22.1	17.9	13.9
31.1	31.1	44.1	38.4	25.5	21	19.3	13.5
32	33.7	40.4	31	25.4	21.8	20	14.3
33.2	28.5	28.1	26.9	22.3	22.6	17.9	13.3
29.5	27.2	26.5	24.7	20.1	18.7	14.2	12.5
29.2	26.9	30.1	24.2	20.3	20.1	17.9	13.5
32.6	33.2	28.3	25.5	27.9	26.4	25.4	19.6
30.4	32	44.7	34.7	25.1	22.1	19.9	18.4
32.2	31.8	41.5	32.2	27.6	22.3	19	16.2
27.4	27.4	34.1	34.1	22.9	19.1	17.2	12.3
28.9	28.1	30.7	26.8	24.3	25.9	23.8	16.3
32.7	30.3	31.4	30.6	31.9	24.3	22.6	18.2
33.8	32.3	30.7	27.6	26.5	24	23	19.3
34.2	30.7	40.1	40.6	23.2	18	13.5	13.8
31.3	28.8	35.6	40.4	24.6	16.5	15.8	11.3
33	29.9	29.7	26.1	20.4	19.1	18.9	13.8
33.3	30.7	29.6	28.9	24	19.2	19.7	14.8
37.4	33.9	31.6	31.4	28.4	29	23.2	26.2
33.9	31.9	39.5	39.4	29.4	22.8	19.6	14.2
35.3	36.9	42	32.8	29.5	28.2	25.9	21.8
34.1	30.8	38	38.2	24.9	22.1	19.6	19
35.9	36.7	38.1	36.4	32.3	32	30.6	25.6
35.2	35.2	33.3	31.2	30	28.1	23.5	19.1
37.3	35.6	36.1	37.3	32.5	31	29.2	27.2
34.6	31.3	32.8	30.1	27.4	31.2	20.8	16.3
35.9	34.8	37.1	35	29	28.7	28.3	22.4

Lfeq 8 kHz (1/3)	Lfeq 10 kHz (1/3)	
9.9	9.2	
16.4	11.8	
20.3	17.1	
10.1	9.1	
22.4	18.9	
13	10.6	
19.5	13.8	
18.8	19.5	
16.7	14.5	
12.4	9.1	
18.4	13.8	
10.1	9	
21.3	16.8	
18.2	13.7	
17.5	14.3	
18	13.4	
24.4	17.9	
13.5	11.9	
24.1	22.2	
13.9	12.2	
19.2	16.9	
12	9.8	
10.6	9.5	
14.8	12.2	
13	13.7	
13.4	10.8	
17.4	10	
12.4	10.3	
15.7	12.5	
14.6	14.1	
16.8	12.5	
19.7	14.5	
10.8	9.5	
10.1	9.1	
10.5	9.2	
15.5	10.5	
11.1	10.9	
18	15.8	
14.7	11.4	
10.4	9.4	
9.7	8.7	
9.7	8.9	
18.7	15.2	

12.7 19.8 12.1 14.6 12.7 14.9 20.5 11.6 10.5 12.5 10.6 13.5 10.3 13.7 14 11.5 15.8 13.7 11.9 15.1 11.8 19.6 17.2 29.5 13.4 13.6 14.6 17.1 29 28.6 19.9 21 20.3 10.1 10.6 9.9 15 14 11.6 16.1 16.9 9.9 18 18 14 14.7 11.9

11.2 15.3 10.8 13.1 10.8 12.6 16.1 10 9.6 9.9 9.3 10 8.7 10.1 11 9.8 12.4 10.4 9.3 11.5 10.7 14.7 10.5 26.4 10.6 10.6 14.4 11.4 26.7 22.1 13 15.3 19.3 9.3 9.3 8.9 10.9 10 9.6 11.8 15.3 9.5 14.7 12.3 10.9 12.4 9.7

10.6	9
13.2	10.4
16.4	9.9
14.6	9.4
20.6	17
27.2	22.3
18.1	16.9
20.9	18.8
16.3	14.4
19.8	18.9
13.3	12.2
18	16.9
20.6	18
27.4	25.2
15.2	14.1
14.8	12.8
13	14.3
10.6	9.5
12.6	11.3
12	10.3
13.8	12.4
13.2	10.7
11.9	10.7
11.3	10.2
11.5	10.5
17.6	14.1
14.5	11
14.3	10.7
10.4	9.4
12.3	11.1
13.2	10
16.9	14.7
10.9	8.8
9.5	8.9
10.9	9.1
11.4	8.9
22.5	22.5
12.6	11.1
18.2	15.6
15.5	11.8
24.3	18.4
16.3	14
23.7	20.3
15.8	14.4
18.5	15.4

Appendix C

Calibration Certificates

Campbell Associates Ltd

5b Chelmsford Road Industrial Estate
GREAT DUNMOW, Essex, GB-CM6 1HD
www.campbell-associates.co.uk
Phone 01371 871030 Facsimile 01371879106



CALIBRATION



0789

Certificate of Calibration and Conformance

Certificate number: U32216

Test object: Sound Level Meter, BS EN IEC 61672-1:2013 Class 1 (Precision) and associated Frequency Analyser BS EN IEC 61260, Class 1
Producer : Norsonic
Type : 145
Serial No.: 14529148
Customer: Clement Acoustics Ltd
Address: 1B(c) Yukon Road,
London. SW12 9PZ.
Contact Person: Florian Clement

Method :

Calibration has been performed as set out in CA Technical Procedures TP01 & 02 as appropriate. These are based on the procedures for periodic verification of sound level meters as set out in BS EN IEC 61672-3:2013 and for electrical testing of frequency filters as set out in BS EN IEC 61260. Results and conformance statement are overleaf and detailed results are in the attached Test Report.

Tested

	Producer:	Type:	Serial No:	Certificate number
Microphone	Norsonic	1227	332156	32215
Calibrator*	Norsonic	1251	31716	U32214
Preamplifier	Norsonic	1209	22275	Included

Additional items that also have been submitted for verification

Wind shield	Norsonic	Nor1451 (ø 60mm)
Attenuator	-	
Extension cable	-	

These items have been taken into account wherever appropriate.

Instruction manual: Im145_1Ed1R0En Firmware version: Appl: v2.2.1601/SP: v2.2.26 The test object is a single channel instrument.

Conditions	Pressure	Temperature	Humidity
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	101.98 ±0.17 kPa	21.8 ±0.8 °C	44.3 ±0.7 %RH

Date received for calibration: 26/06/2019
Date of calibration: 03/07/2019
Date of issue: 03/07/2019
Engineer

Supervisor


Palanivel Marappan B.Eng (Hons), M.Sc


Darren Batten Tech IOA

Certificate of Calibration and Conformance

UKAS Laboratory Number 0789

Certificate number: U32216

Conformance

From markings on the sound level meter or by reference to the manufacturer's published literature it has been determined that the instrument submitted for verification was originally manufactured to BS EN IEC 61672-1:2013 and similarly that the associated sound calibrator conforms to BS EN IEC 60942.

Statement of conformance

The sound level meter submitted for testing has successfully completed the periodic tests of BS EN IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available¹, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with BS EN IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in BS EN IEC 61672-1:2013, and that the sound level meter submitted for testing conforms to the class 1 specifications of BS EN IEC 61672-1:2013.

The filter functions have been found to conform, by electrical testing, to the relative attenuation requirement of BS EN IEC 61260 (as required by UKAS Lab23) for a class 1 filter over the range of frequencies shown in the attached test report.

¹ This evidence is held on file at the calibration laboratory

Summary of Measurement Results

Indication at the calibration check frequency - IEC61672-3 Ed.2 Clause 10	Passed
Self-generated noise - IEC 61672-3 Ed.2.0 Clause 11.2	Passed
Acoustical signal tests of a frequency weighting - IEC 61672-3 Ed.2.0 Clause 12	Passed
Electrical signal tests of frequency weightings - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency weightings: A Network - IEC 61672-3 Ed.2.0 Clause 13.3	Passed
Frequency weightings: C Network - IEC 61672-3 Ed.2.0 Clause 13.3	Passed
Frequency weightings: Z Network - IEC 61672-3 Ed.2.0 Clause 13.3	Passed
Frequency and time weightings at 1 kHz IEC 61672-3 Ed.2.0 Clause 14	Passed
Level linearity on the reference level range - IEC 61672-3 Ed.2.0 Clause 16	Passed
Toneburst response - IEC 61672-3 Ed.2.0 Clause 18	Passed
Peak C sound level - IEC 61672-3 Ed.2.0 Clause 19	Passed
Overload indication - IEC 61672-3 Ed.2.0 Clause 20	Passed
High level stability test - IEC 61672-3 Ed.2.0 Clause 21	Passed
Long term stability test - IEC 61672-3 Ed.2.0 Clause 15	Passed
1/1octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3	Passed
1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3	Passed

Comment

Correct level with associated calibrator is 114.0dB(A).

Observations

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k = 2$, providing a coverage probability of approximately 95 %. The uncertainty evaluation has been carried out in accordance with UKAS requirements. Details of the uncertainty for each measurement are available from the Calibration Laboratory upon request. Details of the sources of corrections and their associated uncertainties that relate to this verification are contained within the test report accompanying this certificate.



CERTIFICATE OF CALIBRATION



0653

Date of Issue: 08 July 2020

Issued by:

ANV Measurement Systems

Beaufort Court

17 Roebuck Way

Milton Keynes MK5 8HL

Telephone 01908 642846 Fax 01908 642814

E-Mail: info@noise-and-vibration.co.uk

Web: www.noise-and-vibration.co.uk

Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Certificate Number: UCRT20/1607

Page 1 of 2 Pages
Approved Signatory

B. Giles

CUSTOMER
Clement Acoustics Ltd
First Floor 1B(C)
Yukon Road
London
SW12 9PZ

ORDER No 2006300059

Job No UKAS20/07348

DATE OF RECEIPT 06 July 2020

PROCEDURE Procedure TP 1 Calibration of Sound Calibrators

IDENTIFICATION Sound Calibrator Norsonic type 1251 serial number 31716 with one-inch housing and adapter type 1443 for half-inch microphone

CALIBRATED ON 08 July 2020

PREVIOUS CALIBRATION Calibrated on 02 July 2019, Certificate No. U32214 issued by a UKAS accredited calibration laboratory No. 0789

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. *This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.*

CERTIFICATE OF CALIBRATION

UKAS ACCREDITED CALIBRATION LABORATORY No 0653

Certificate No UCRT20/1607

Page 2 of 2 Pages

MEASUREMENTS

The sound pressure level generated by the Sound Calibrator in its half-inch configuration was measured using a B&K type 4134 microphone with the protective grid in position. The microphone sensitivity was traceable to National Standards.

RESULTS

The mean level of the calibrator output was

114.18 ± 0.1 dB rel 20 μ Pa

The fundamental frequency of the sound output was 1002 Hz $\pm$ 0.06 %, and its total distortion was (0.12 $\pm$ 0.03) %.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

During the measurements the laboratory environmental conditions were:

Temperature: 23 to 24 °C

Atmospheric pressure: 100.4 to 100.5 kPa

Relative humidity: 56 to 66 %

The tests carried out were as specified in Annex B of BS EN 60942:2003, but with five determinations of sound pressure level, and limited to the above level(s) & freq(s). The sound calibrator has been shown to conform to the class 1 requirements for periodic testing in Annex B of IEC 60942:2003 for the sound pressure level and frequency stated, for the environmental conditions under which the tests were performed. However, as public evidence was not available, from a testing organisation responsible for pattern approval, to demonstrate that the model of sound calibrator conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, no general statement or conclusion can be made about conformance of the sound calibrator to the requirements of IEC 60942:2003. However it has successfully undergone pattern evaluation to the earlier Standard IEC 942:1988.

The results on this certificate only relate to the items calibrated as identified above.

Calibrator adjusted

No

END

R 2

Project No: 100942
Date: 16th February 2023

FAO: John Egan,

Re: Infiltration and DCP testing at 'Northern Lawn Tennis Club, Palentine Road, Manchester, M20 3YA'.

Dice Environmental have been instructed by John Egan to complete DCP testing and 2No. Soakaway tests in accordance with BRE365 at 'Northern Lawn Tennis Club, Palentine Road, Manchester, M20 3YA'.

Exploratory field work was undertaken on the 1st February 2023, comprising the mechanical excavation of 2No. trial pit to a maximum depth of 1.3mbgl, which were subsequently utilised for infiltration testing, in accordance with the methodology outlined in BRE Digest 365.

DCPs were undertaken in 3No. locations, advanced from surface to a maximum depth of 986mm.

Infiltration and DCP test locations are highlighted in Appendix A.

Infiltration test results with Infiltration rates and a general soil description for each location are in Appendix B.

DCP results and equivalent CBR values are available in Appendix C.

I trust that the content of this letter is suitable for your requirements; however, should you require any additional information, please do not hesitate to contact me.

Yours Sincerely



Jake Bayne MSc MEnvSc CEnv
Director

Appendix A – Infiltration test location plan
Appendix B – Infiltration test results in accordance with BRE365
Appendix C – DCP results and equivalent CBR values

APPENDIX A



Title
Site Location

Reference
100942

Date
02/02/2023

Site Address

**Northern Lawn Tennis Club,
Palentine Road,
Manchester,
M20 3YA**

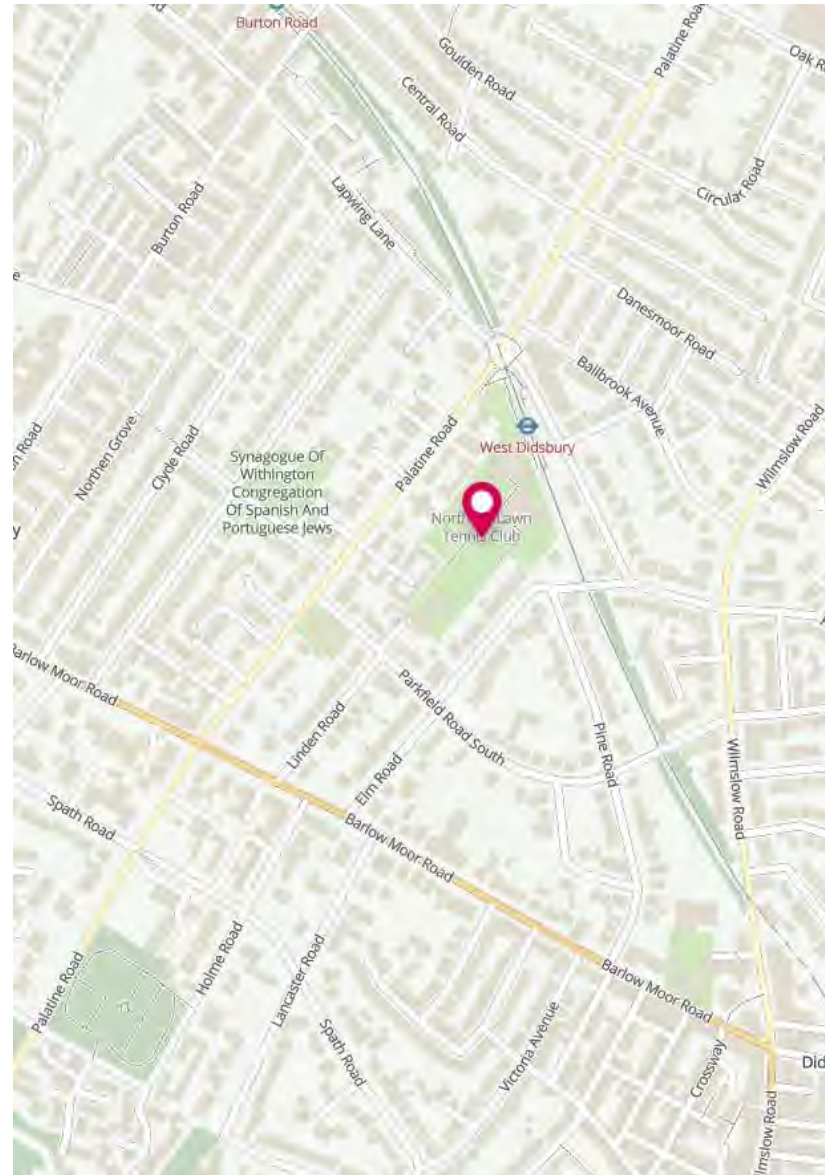
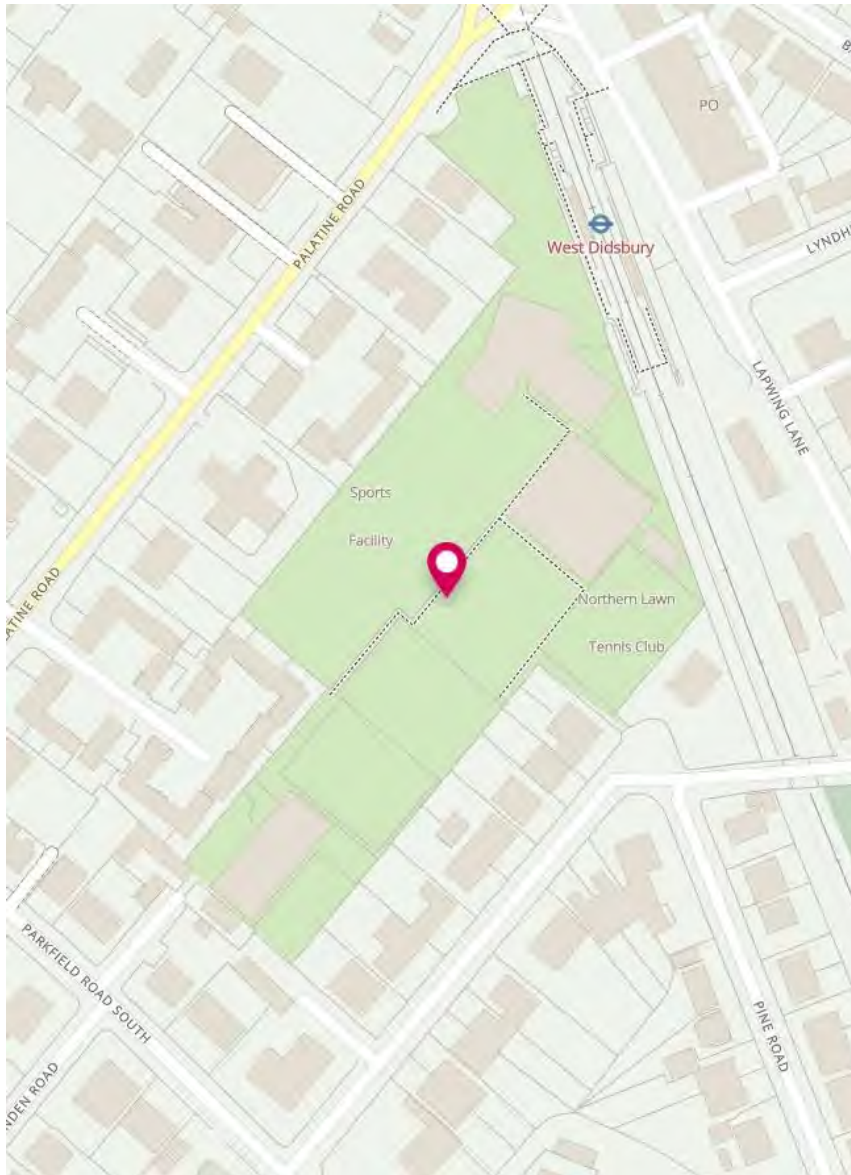
Legend

 **Approximate Site Centre**

Scale
NTS

Drawn
AMD

Figure Number
Fig.1





Title

Site Layout

Reference

100942

Date

02/02/2023

Site Address

Northern Lawn Tennis Club,
Palentine Road,
Manchester,
M20 3YA

Legend

Scale

NTS

Drawn

AMD

Figure Number

Fig.2



Title
Photos

Reference
100942

Date
02/02/2023

Site Address

Northern Lawn Tennis Club,
Palentine Road,
Manchester,
M20 3YA

Legend

Scale
NTS

Drawn
AMD

Figure Number
Fig.3





Title

SI Plan

Reference

100942

Date

02/02/2023

Site Address

Northern Lawn Tennis Club,
Palentine Road,
Manchester,
M20 3YA

Legend



Borehole location



Trial Pit with
Infiltration Testing



Trial Pit



DCP Test Location

Scale

NTS

Drawn

AMD

Figure Number

Fig.4



Location plan showing the position of the proposed padel court area outlined in red



Location plan showing the position of the replacement court area



Title

Development Proposal

Reference

100942

Date

02/02/2023

Site Address

Northern Lawn Tennis Club,
 Palentine Road,
 Manchester,
 M20 3YA

Legend

Scale

NTS

Drawn

AMD

Figure Number

Fig.5

APPENDIX B

INSITU SOAKAWAY TEST RESULTS

Page 1 of 2

Trial pit No.: SA1

Soil Profile:

Depth (m)		Description
From:	To:	
0.00	0.20	Topsoil
0.20	0.40	Slightly gravelly sandy CLAY.
0.40	0.90	Gravelly slightly silty SAND.
0.90	1.30	Very gravelly slightly silty SAND.

Sketch plan of test zone

Not to scale

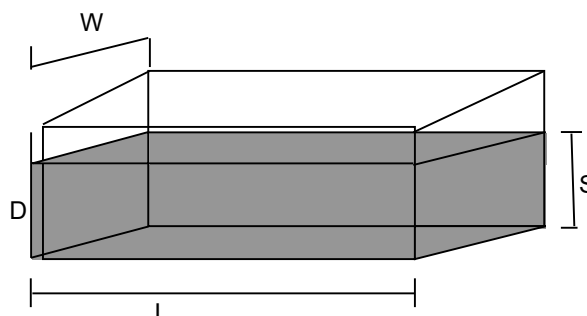
All dimensions in metres.

D = Depth of test pit = 1.3

W = Width of test pit = 0.6

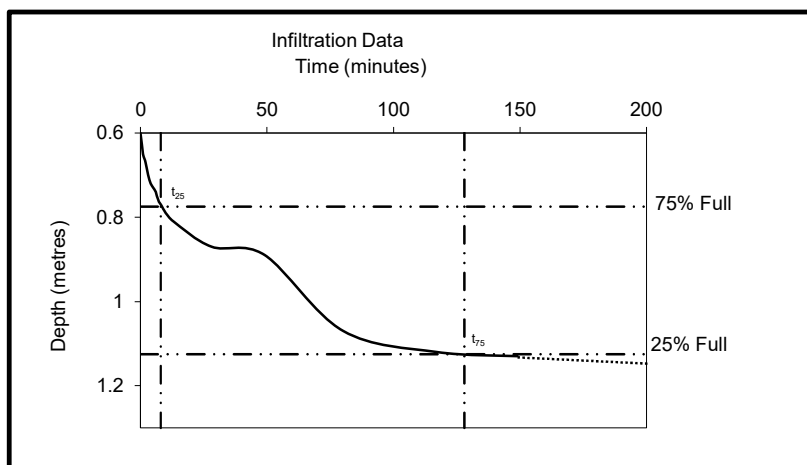
L = Length of test pit = 1.7

S = Storage depth (of water) = 1.0



Soakaway Test Run 1

Test Date: 01/02/2023



Time (minutes)	Depth (m)
0	0.60
1	0.65
2	0.67
3	0.70
4	0.72
5	0.73
6	0.74
7	0.76
8	0.77
9	0.78
10	0.79
13	0.81
28	0.87
49	0.89
80	1.07
117	1.12
149	1.13

Notes:

Therefore:

$$S = 0.70 \text{ m} \quad a_{p50} = 2.63 \text{ m}^2 \quad V_{p75-25} = 0.357 \text{ m}^3$$

From the above graph,

$$t_{p25} = 8 \text{ (min)} \quad t_{p75} = 128 \text{ (min)}$$

$$\text{Soil Infiltration Rate: } f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}} \quad f_{\text{run1}} = 1.89\text{E-}05 \text{ m/s}$$

$$\text{or } = 6.79\text{E-}02 \text{ m/hr}$$

Test and analysis carried out in general accordance with BRE Digest 365

Job No.: 100942

Site: Northern Lawn Tennis Club

Client: John Egan



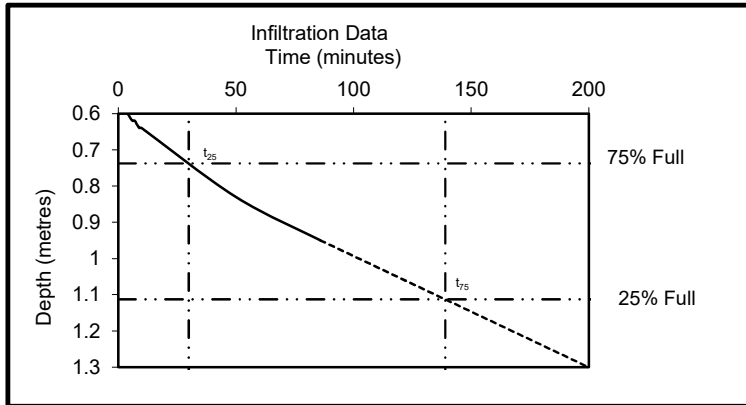
INSITU SOAKAWAY TEST RESULTS

Page 2 of 2

Trial pit No.: SA1

Soakaway Test Run 2

Test Date: 01/02/2023



Time (minutes)	Depth (m)
0.0	0.55
1.0	0.57
2.0	0.58
3.0	0.59
4.0	0.60
5.0	0.61
6.0	0.62
7.0	0.62
8	0.63
9	0.64
10	0.64
50	0.83
86	0.95

Therefore:

$$S = 0.75 \text{ m} \quad a_{p50} = 2.75 \text{ m}^2 \quad V_{p75-25} = 0.3825 \text{ m}^3$$

From the above graph,

$$t_{p25} = 30 \text{ (min)} \quad t_{p75} = 139 \text{ (min)}$$

$$\text{Soil Infiltration Rate: } f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}} = 2.13\text{E-}05 \text{ m/s} \\ \text{or } = 7.67\text{E-}02 \text{ m/hr}$$

Job No.: 100942
Site: Northern Lawn Tennis Club
Client: John Egan



INSITU SOAKAWAY TEST RESULTS

Page 1 of 1

Trial pit No.: SA2

Soil Profile:

Depth (m)		Description
From:	To:	
0.00	0.30	Topsoil
0.30	0.50	MG - black very clayey gravelly sand.
0.50	1.00	Very sandy slightly silty slightly gravelly CLAY
1.00	1.30	Very gravelly slightly silty SAND.

Sketch plan of test zone

Not to scale

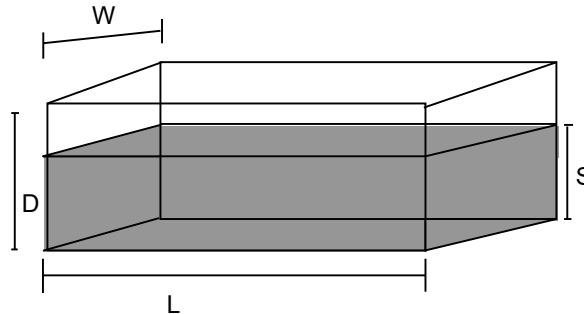
All dimensions in metres.

D = Depth of test pit = 1.3

W = Width of test pit = 0.5

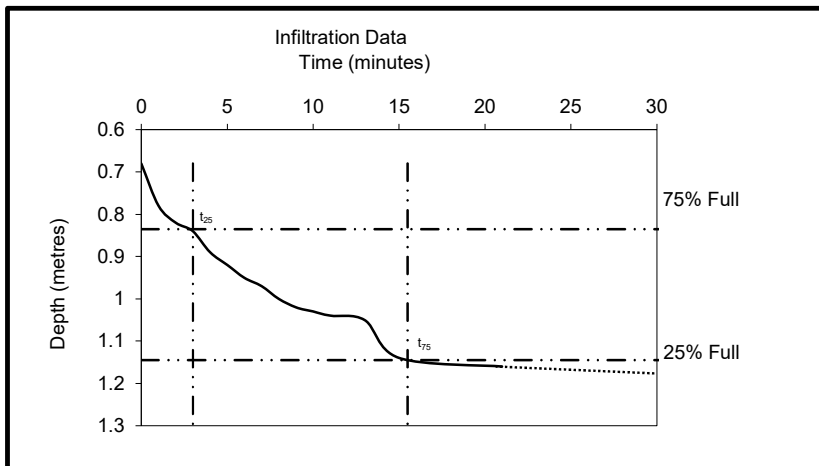
L = Length of test pit = 1.7

S = Storage depth (of water) = 1.0



Soakaway Test Run 1

Test Date: 01/02/2023



Time (minutes)	Depth (m)
0	0.68
1	0.78
2	0.82
3	0.84
4	0.89
5	0.92
6	0.95
7	0.97
8	1.00
9	1.02
10	1.03
11	1.04
13	1.05
15	1.14
21	1.16

Notes:

Therefore:

$$S = 0.62 \text{ m} \quad a_{p50} = 2.21 \text{ m}^2 \quad V_{p75-25} = 0.2635 \text{ m}^3$$

From the above graph,

$$t_{p25} = 3 \text{ (min)} \quad t_{p75} = 15.5 \text{ (min)}$$

$$\text{Soil Infiltration Rate: } f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}} \quad f_{run1} = 1.59\text{E-}04 \text{ m/s}$$

$$\text{or } = 5.71\text{E-}01 \text{ m/hr}$$

Test and analysis carried out in general accordance with BRE Digest 365

Job No.: 100942

Site: Northern Lawn Tennis Club

Client: John Egan



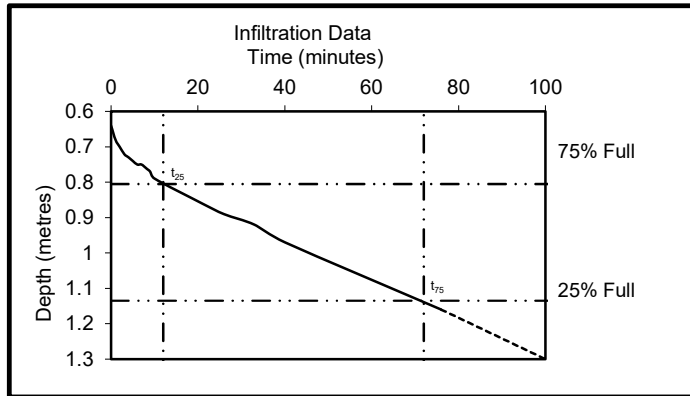
INSITU SOAKAWAY TEST RESULTS

Page 2 of 2

Trial pit No.: SA2

Soakaway Test Run 2

Test Date: 01/02/2023



Time (minutes)	Depth (m)
0.0	0.64
1.0	0.68
2.0	0.70
3.0	0.72
4.0	0.73
5.0	0.74
6.0	0.75
7.0	0.75
8	0.76
9	0.77
10	0.79
21	0.86
26	0.89
33	0.92
40	0.97
76	1.16

Therefore:

$$S = 0.66 \text{ m} \quad a_{p50} = 2.30 \text{ m}^2 \quad V_{p75-25} = 0.2805 \text{ m}^3$$

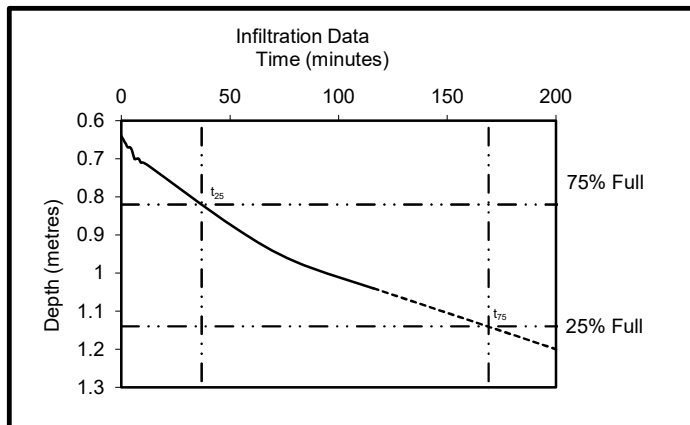
From the above graph,

$$t_{p25} = 12 \text{ (min)} \quad t_{p75} = 72 \text{ (min)}$$

$$\text{Soil Infiltration Rate: } f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}} = 3.38\text{E-}05 \text{ m/s} \\ \text{or} = 1.22\text{E-}01 \text{ m/hr}$$

Soakaway Test Run 3

Test Date: 01/02/2023



Time (minutes)	Depth (m)
0.0	0.64
1.0	0.65
2.0	0.66
3.0	0.67
4.0	0.67
5.0	0.68
6.0	0.70
7.0	0.70
8.0	0.70
9.0	0.71
10.0	0.71
13.0	0.72
52.0	0.88
80.0	0.97
116.0	1.04

Therefore:

$$S = 0.64 \text{ m} \quad a_{p50} = 2.26 \text{ m}^2 \quad V_{p75-25} = 0.272 \text{ m}^3$$

From the above graph,

$$t_{p25} = 37 \text{ (min)} \quad t_{p75} = 169 \text{ (min)}$$

$$\text{Soil Infiltration Rate: } f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}} = 1.52\text{E-}05 \text{ m/s} \\ \text{or} = 5.48\text{E-}02 \text{ m/hr}$$

Test and analysis carried out in general accordance with BRE Digest 365

Job No.: 100942

Site: Northern Lawn Tennis Club

Client: John Egan



APPENDIX C

TEST CERTIFICATE

Determination of TRL Dynamic Cone Penetrometer

Test Results:

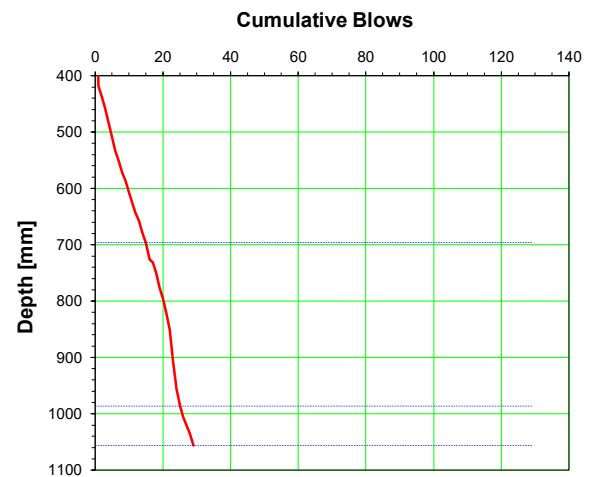
Northern Lawn Tennis Club

Sample Number: TRL DCP 1

Start Depth [mm]: 400mm

Test Location: DCP1

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Layer 1	15	15	5	696	696
Layer 2	10	25	9	290	986
Layer 3	4	29	15	70	1056



Comments: TRL Equation : $\text{Log}_{10}(\text{CBR}) = 2.632 - 1.28 \times \text{Log}_{10}(\text{Strength})$

TEST CERTIFICATE

Determination of TRL Dynamic Cone Penetrometer

Test Results:

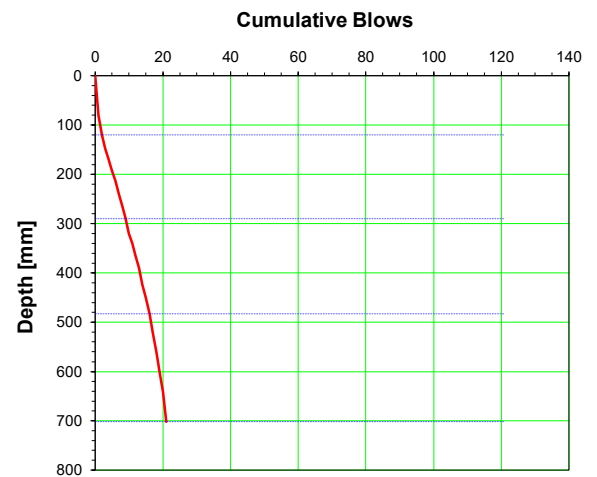
Northern Lawn Tennis Club

Sample Number: TRL DCP 2

Start Depth [mm]: 0mm

Test Location: DCP2

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Layer 1	2	2	4	120	120
Layer 2	7	9	10	170	290
Layer 3	7	16	9	193	483
Layer 4	5	21	6	219	702



Comments: TRL Equation : $\text{Log}_{10}(\text{CBR}) = 2.632 - 1.28 \times \text{Log}_{10}(\text{Strength})$

TEST CERTIFICATE

Determination of TRL Dynamic Cone Penetrometer

Test Results:

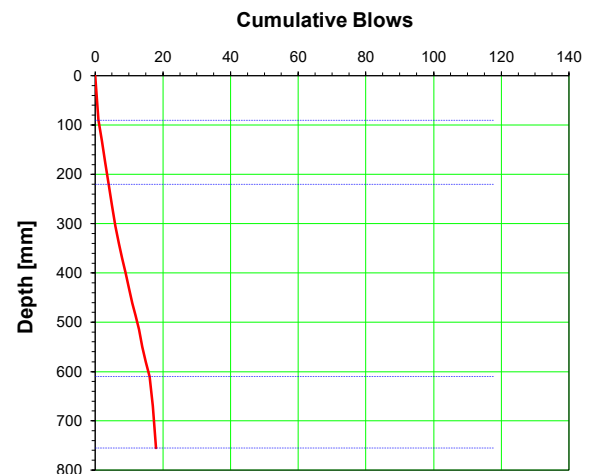
Northern Lawn Tennis Club

Sample Number: TRL DCP 3

Start Depth [mm]: 0mm

Test Location: DCP3

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Layer 1	1	1	3	90	90
Layer 2	3	4	6	130	220
Layer 3	12	16	8	390	610
Layer 4	5	21	9	145	755



Comments: TRL Equation : $\text{Log}_{10}(\text{CBR}) = 2.632 - 1.28 \times \text{Log}_{10}(\text{Strength})$

Tuba tennis court



Manufactured to suit struts or top rail. Stock sizes 2.75 metres - 900mm. Other sizes made to order.

- Line Posts - 42 x 2.5mm CHS (Domestic courts)
- Line Posts - 60.3 x 3.2mm CHS (Club Courts)
- Straining Posts - 60.3 x 3.2mm CHS
- Pedestrian Gates
 - 2.0 x 1.05m wide single leaf (Domestic)
 - 2.0 x 1.2m wide single leaf (Club courts)
- Drop Side Gates to match.

PUMP HOUSE

Equipment storage etc.

Squash co

wide concrete pathway

Terrace

COMPOUND

INDOOR COURTS

Half court

Temporary fence during construction

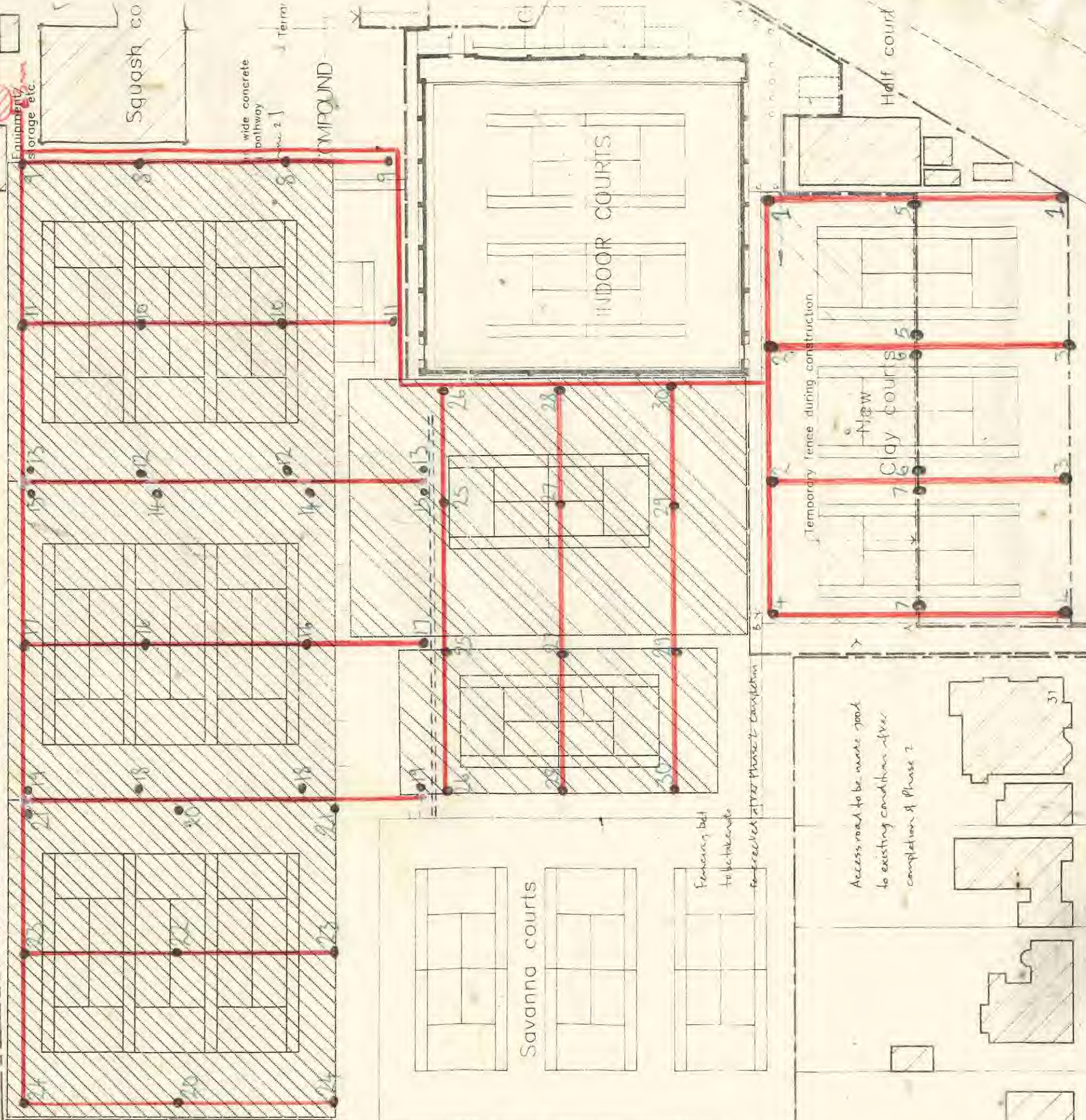
New Clay courts

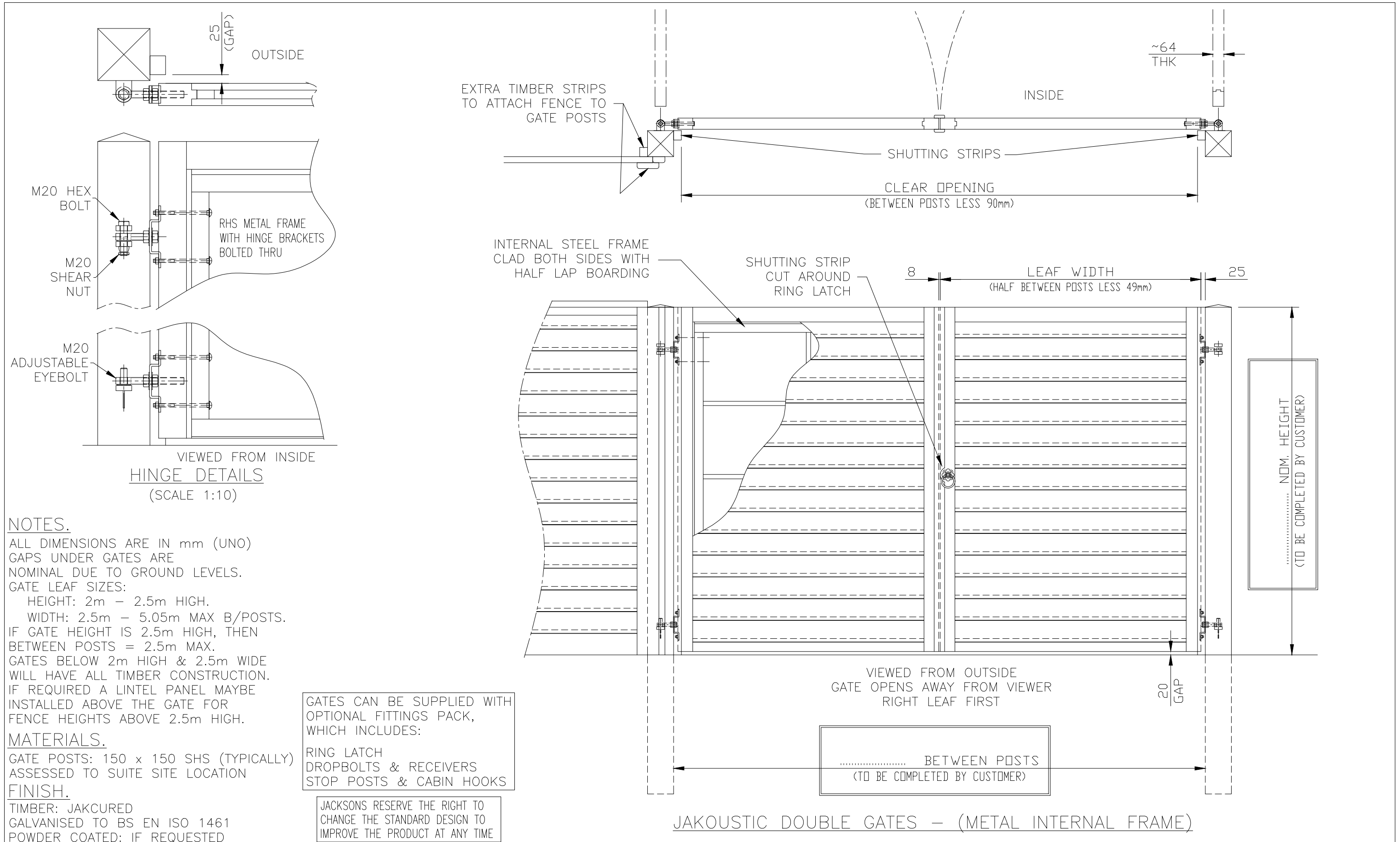
Phase 2 access

Access road to be made good to existing condition after completion of Phase 2

Savanna courts

Fencing belt to be taken into consideration after Phase 2 completion





NOTES.

ALL DIMENSIONS ARE IN mm (UNO)
GAPS UNDER GATES ARE NOMINAL DUE TO GROUND LEVELS.
GATE LEAF SIZES:
HEIGHT: 2m - 2.5m HIGH.
WIDTH: 2.5m - 5.05m MAX B/POSTS.
IF GATE HEIGHT IS 2.5m HIGH, THEN BETWEEN POSTS = 2.5m MAX.
GATES BELOW 2m HIGH & 2.5m WIDE WILL HAVE ALL TIMBER CONSTRUCTION.
IF REQUIRED A LINTEL PANEL MAYBE INSTALLED ABOVE THE GATE FOR FENCE HEIGHTS ABOVE 2.5m HIGH.

MATERIALS.

GATE POSTS: 150 x 150 SHS (TYPICALLY)
ASSESSED TO SUITE SITE LOCATION
FINISH.

TIMBER: JAKCURED
GALVANISED TO BS EN ISO 1461
POWDER COATED: IF REQUESTED

GATES CAN BE SUPPLIED WITH OPTIONAL FITTINGS PACK, WHICH INCLUDES:

RING LATCH
DROPBOLTS & RECEIVERS
STOP POSTS & CABIN HOOKS

JACKSONS RESERVE THE RIGHT TO CHANGE THE STANDARD DESIGN TO IMPROVE THE PRODUCT AT ANY TIME

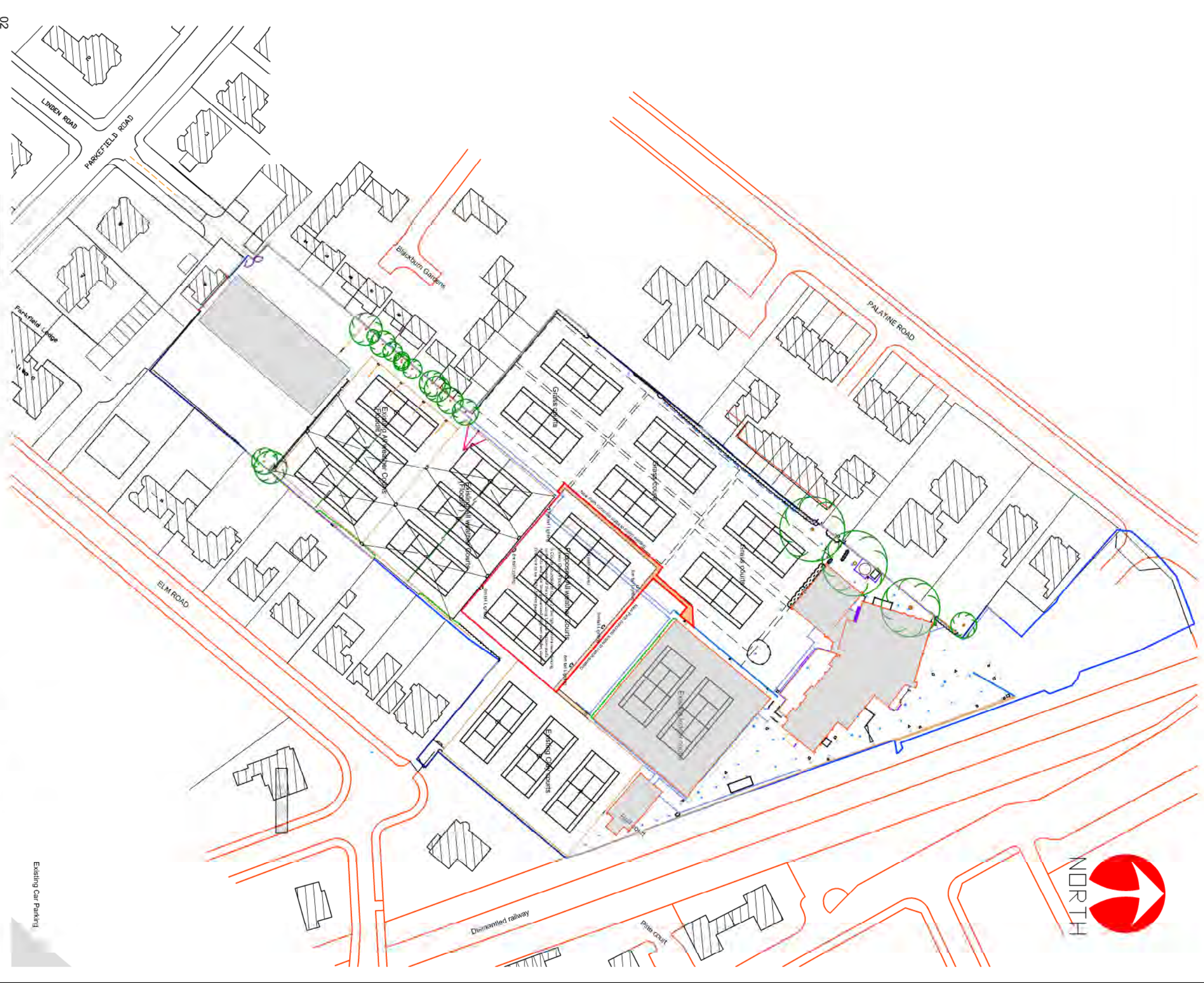
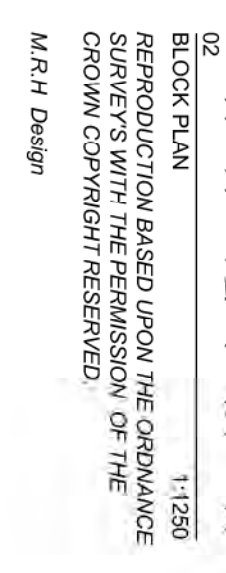
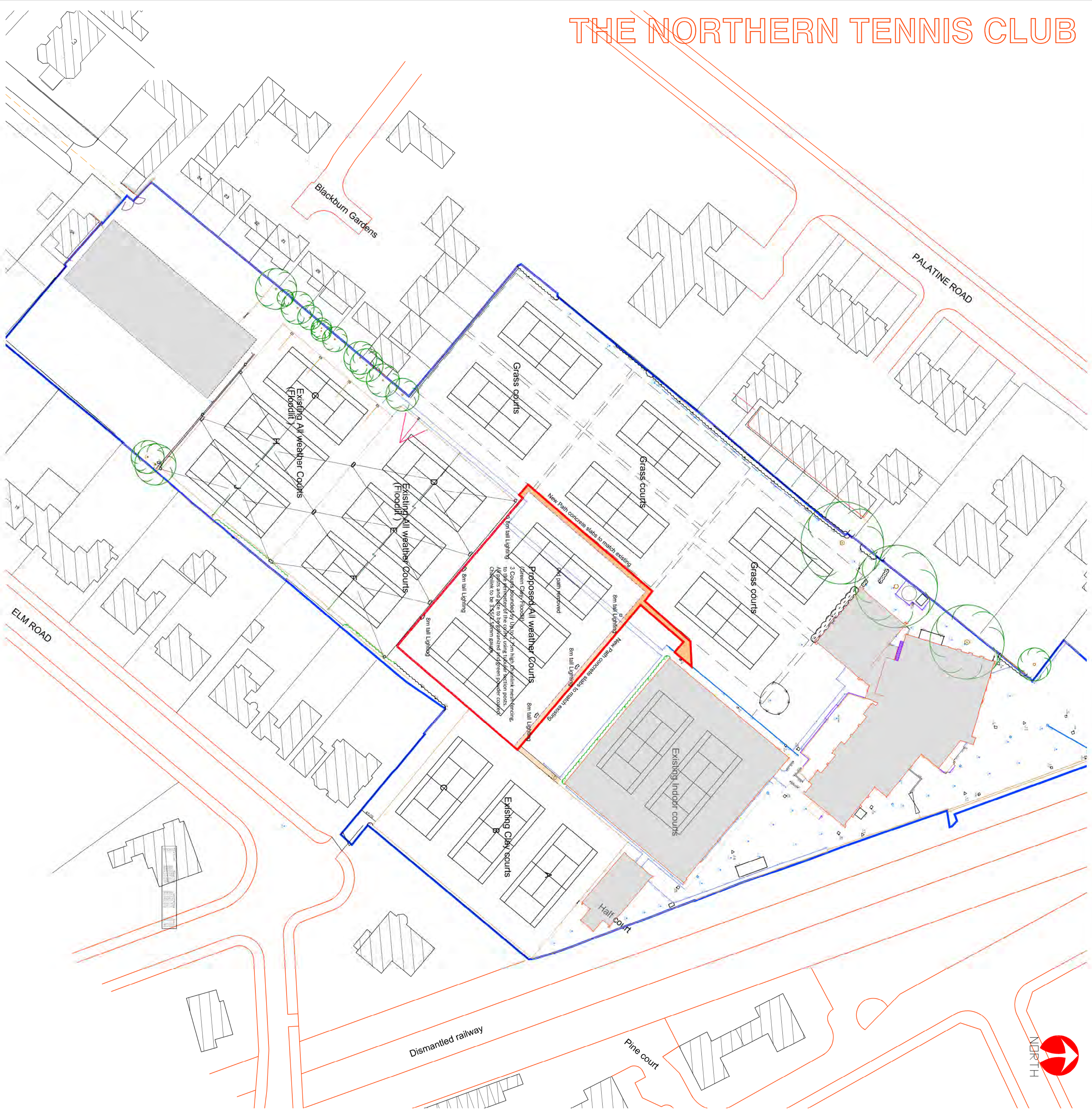
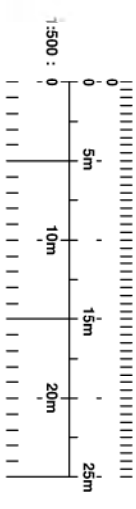
DO NOT SCALE - IF IN DOUBT ASK

3 31/03/2020 NEW BORDER + NOTES
2 29/08/13 LANDSCAPE BOARD REMOVED
1 10/07/07 fence & gravel board
0 07/09/05 ORIGINAL ISSUE

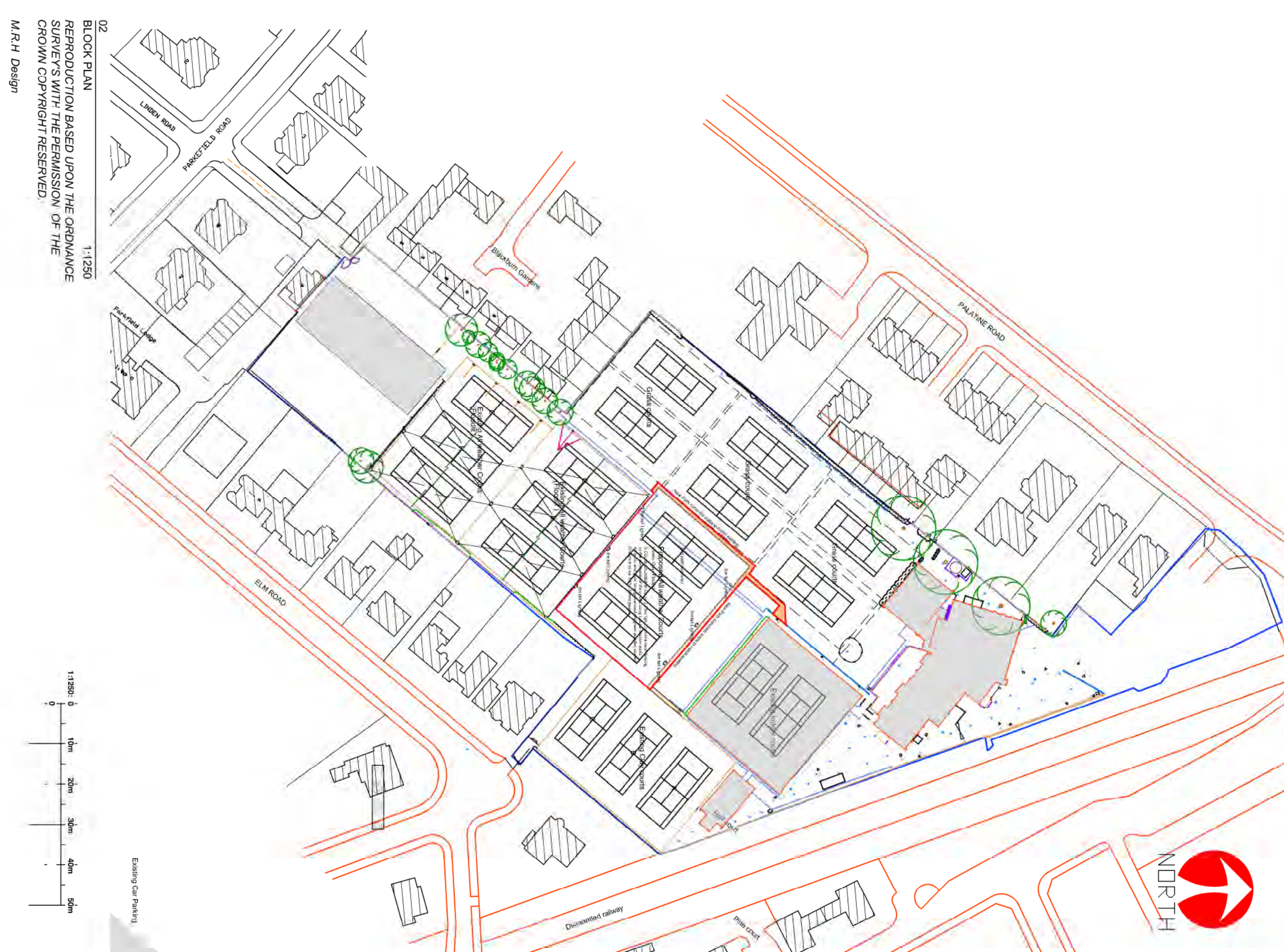
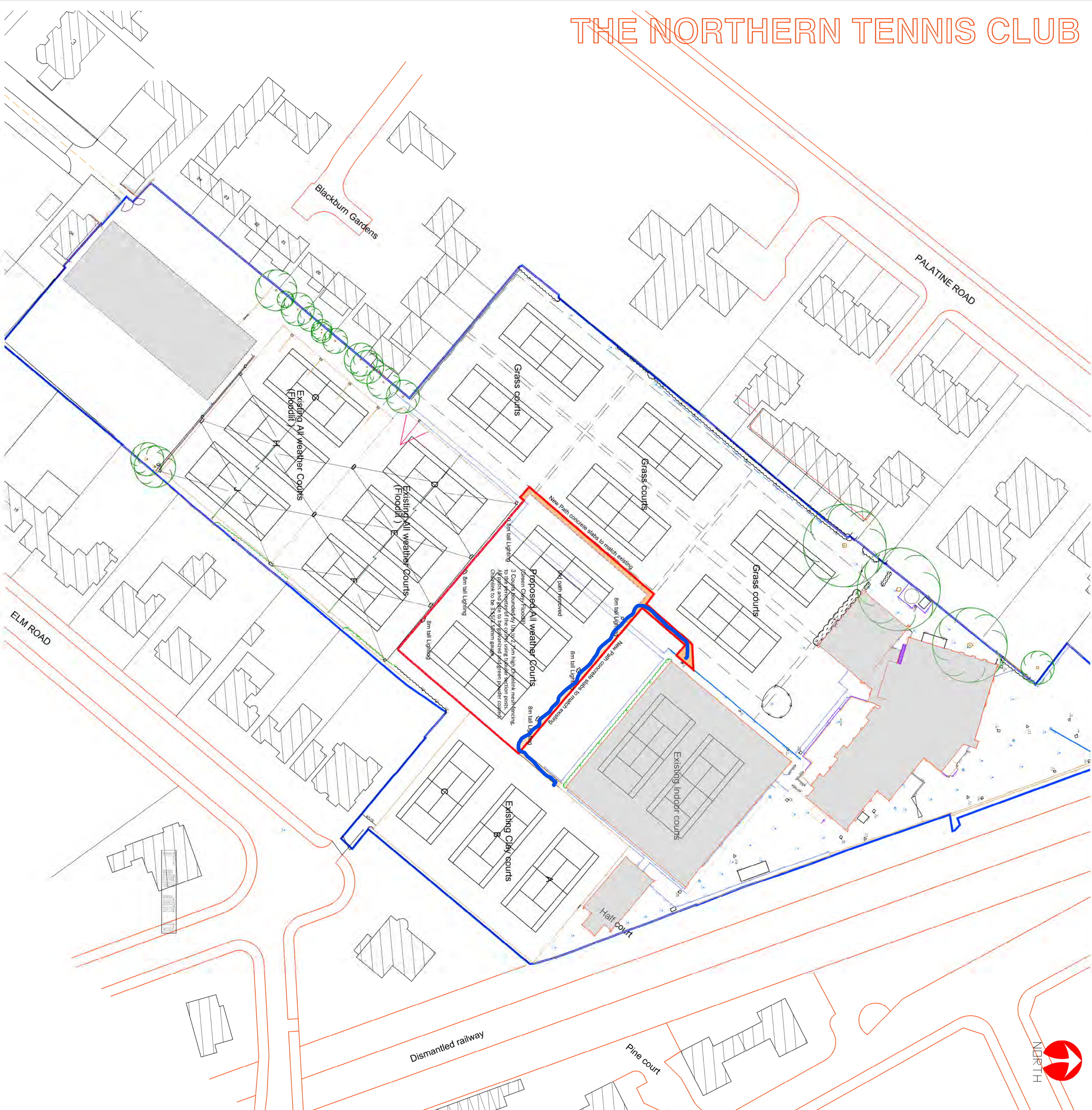
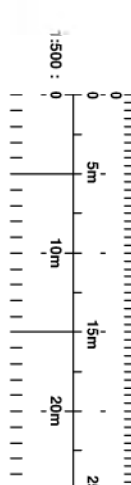
Drawn JR
Date 07/09/2005
Checked AT
Size A3
Scale 1:20 U.O.S

TITLE SALES DRAWING
JAKOUSTIC DOUBLE GATES (METAL INTERNAL FRAME)
CUSTOMER
ACK No.
Drawing No. J7/02161
Sheet 2

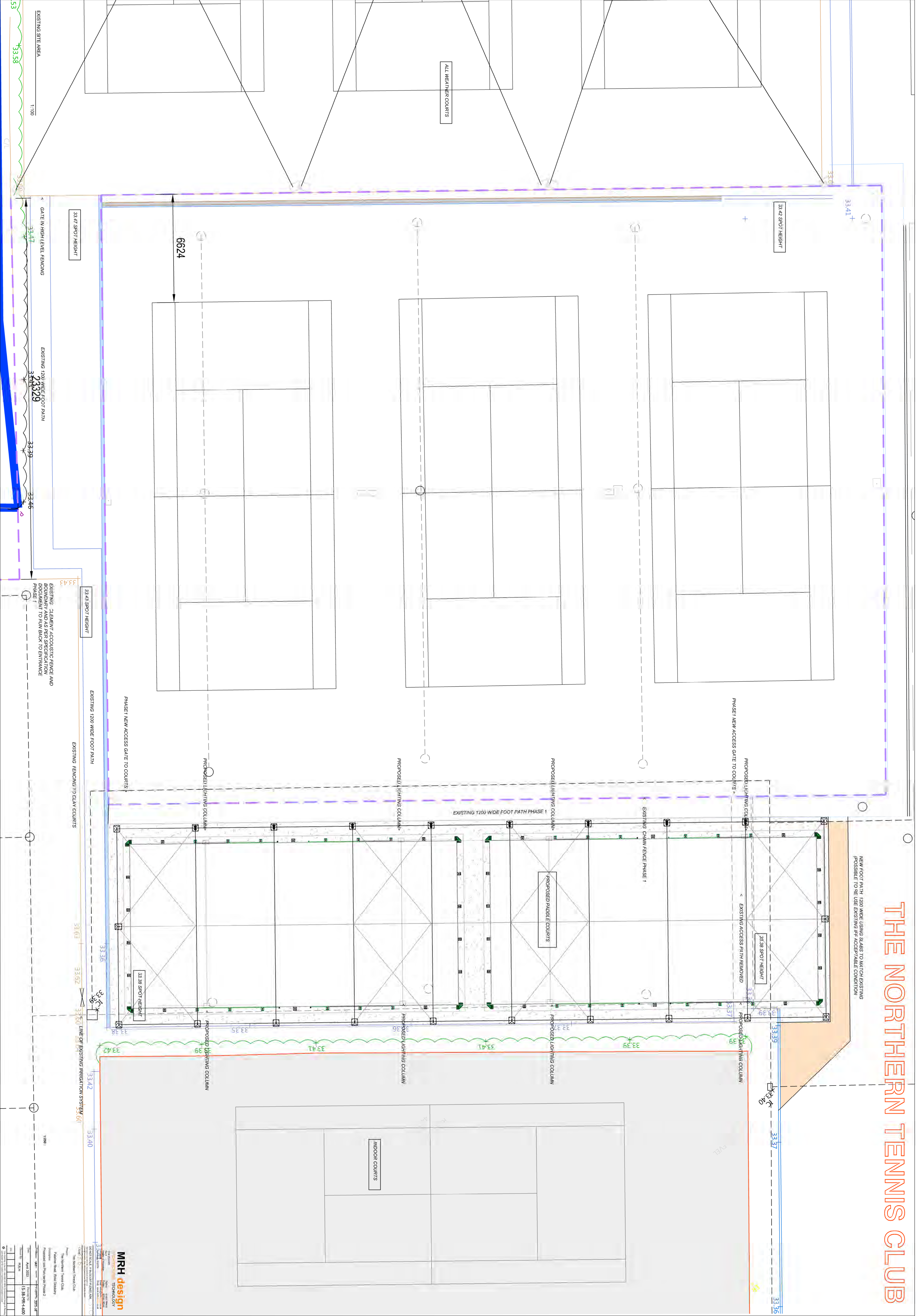
THE NORTHERN TENNIS CLUB



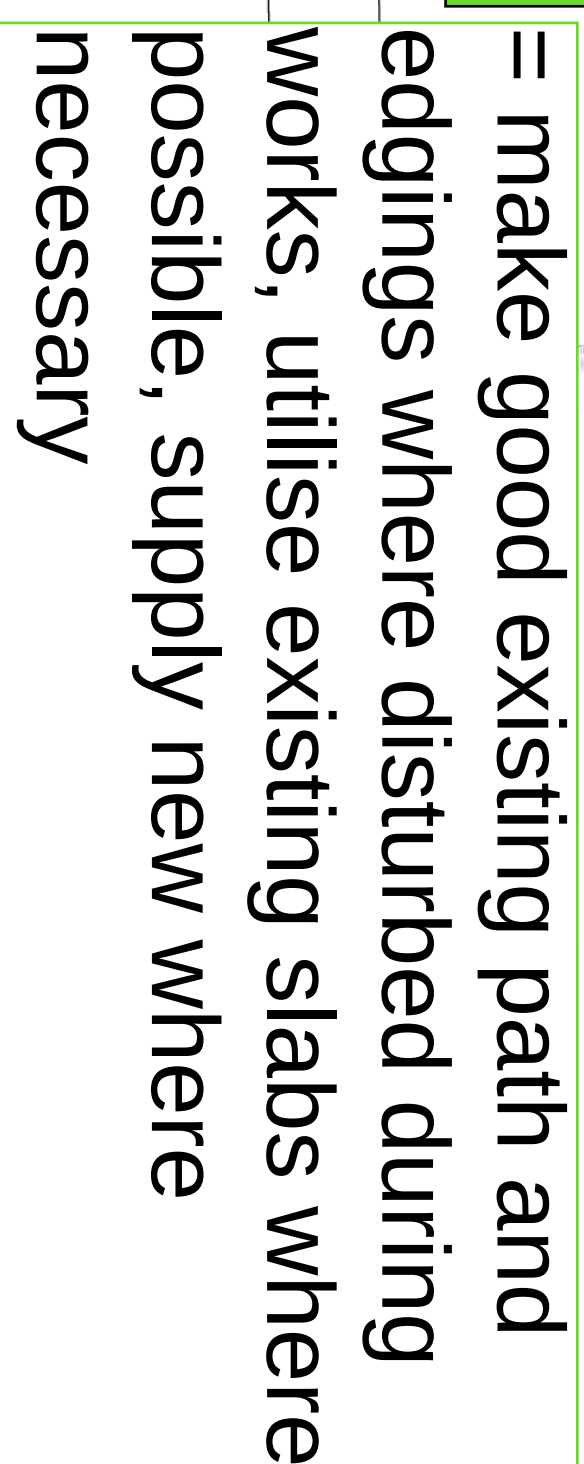
THE ~~NORTHERN~~ TENNIS CLUB

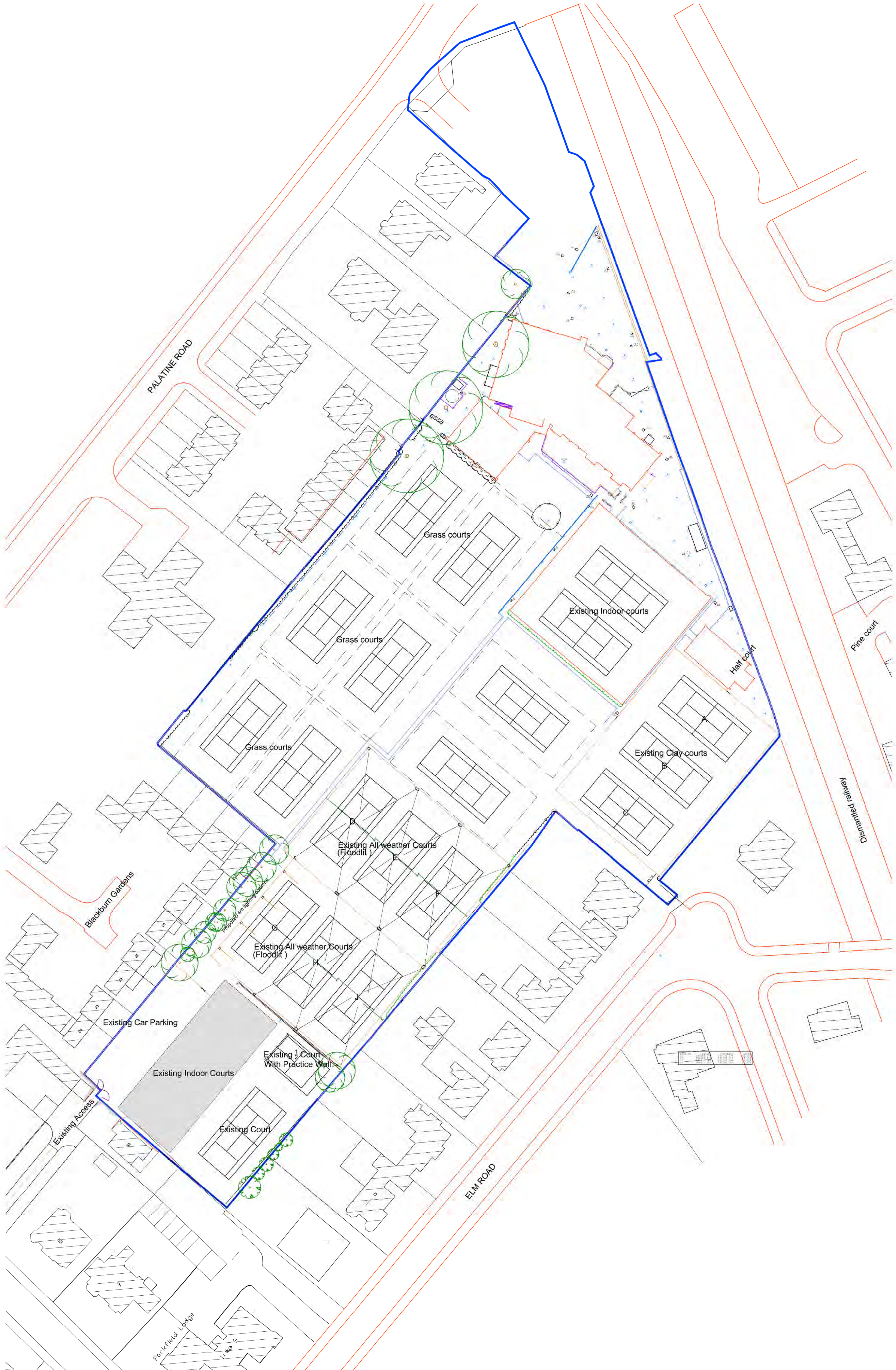


THE NORTHERN TENNIS CLUB

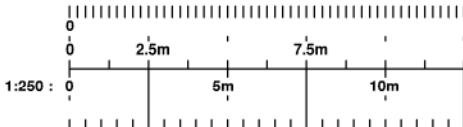


NEW FOOT PATH 1200 WIDE USING SLABS TO MATCH EXISTING
 (POSSIBLE TO RE USE EXISTING IFF ACCEPTABLE CONDITION)





BLOCK PLAN
1:500



MRH design
ARCHITECTURAL TECHNOLOGY

THE STUDIO
No. 9
Highgate Woodside
Waltham
Essex SS11 1AA
Tel: 01938 546464
Email: info@mrhdesign.co.uk
Web: www.mrhdesign.co.uk

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Client
The Northern Tennis Club

Project
The Northern Tennis Club,
Palatine Road, West Oldbury

Drawings
Existing site plan

Scale
A1

Date
Feb 2022

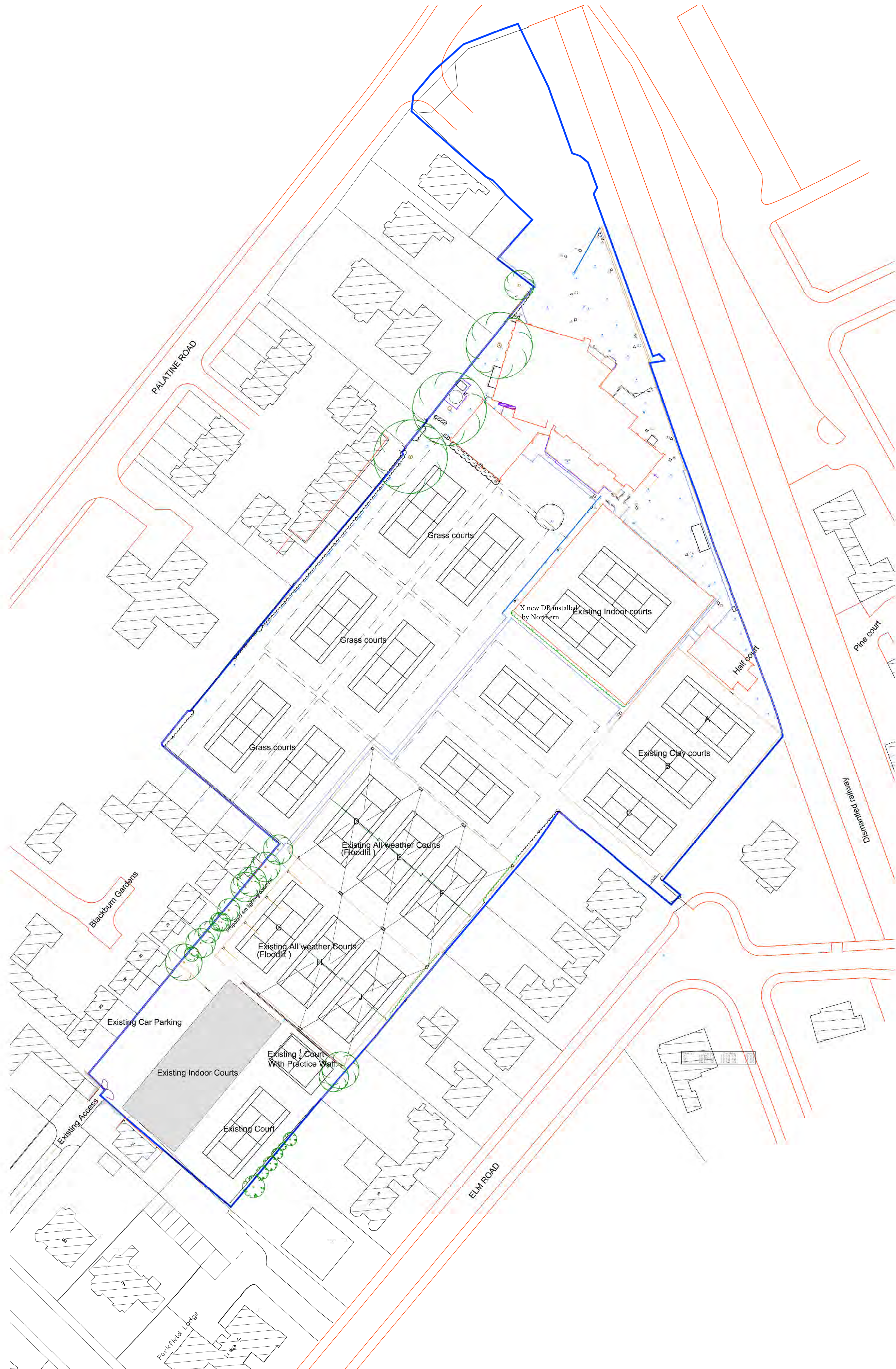
Drawn By
MRH

Project No.
2015-38

Drawing No.
15-38-MRH-002

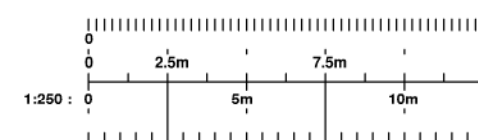
Rev.
1

THE NORTHERN TENNIS CLUB



BLOCK PLAN

1:500



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THE STUDIO
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Wexhill
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Tel/Fax: 01463 794410
Mobile: 07760 195141
Email: info@mrhdesign.co.uk
Web: www.mrhdesign.co.uk

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All testing out must be checked on site prior to commencement. Any discrepancy must be reported to client

Client
The Northern Tennis Club

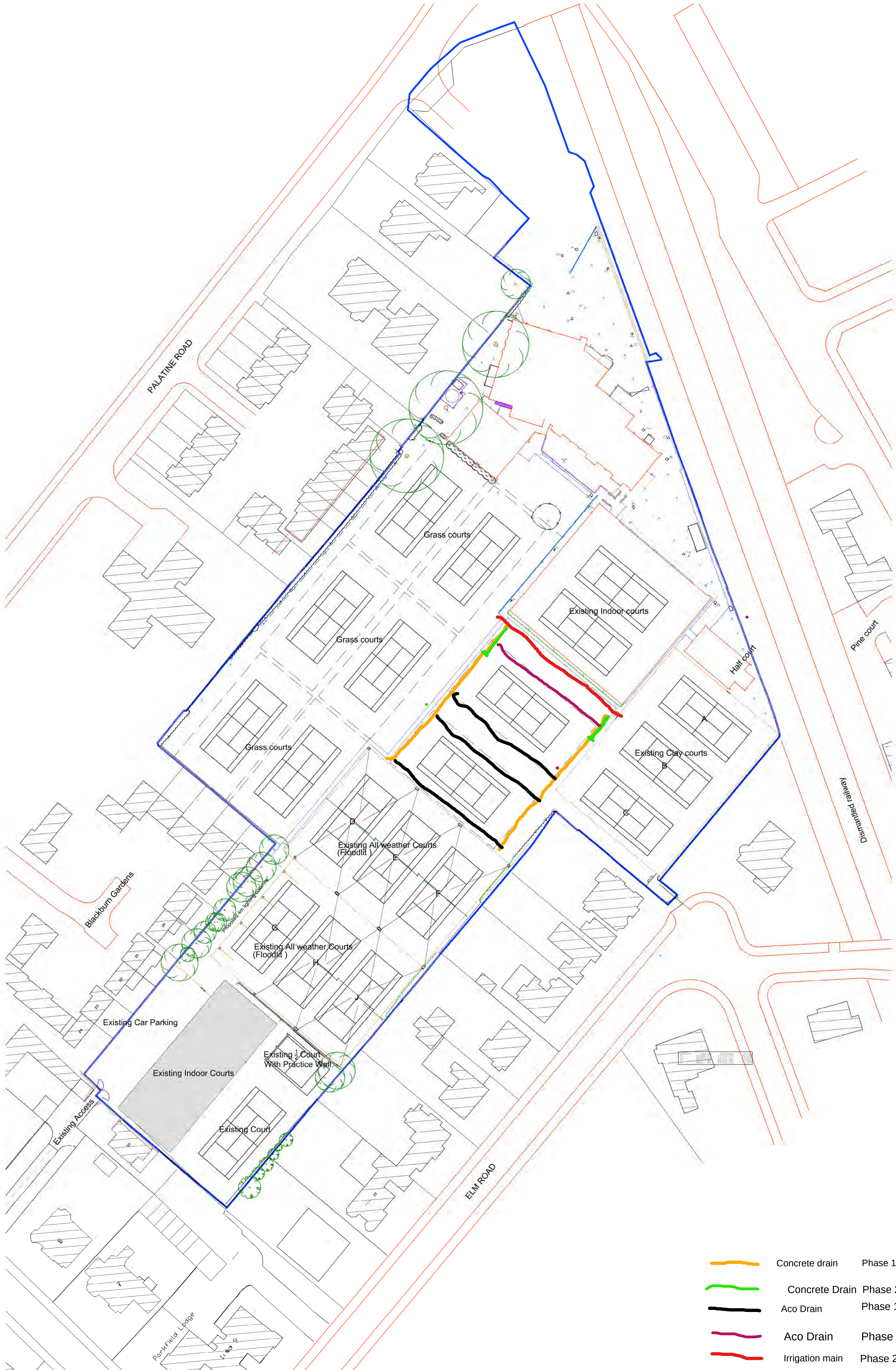
Project
The Northern Tennis Club,
Belmont Road, West Nyack,

Existing site Plan

Scale	AI	Project No. 2015-3
-------	----	--------------------

Date	Feb 2022	Drawing No	15-38-MRH-0
Drawn By	M.R.H		

 This drawing is the sole copyright of SAGE Architectural Designs & P



- Concrete drain Phase 1
- Concrete Drain Phase 2
- Aco Drain Phase 1
- Aco Drain Phase 2
- Irrigation main Phase 2

MRH design

ARCHITECTURAL TECHNOLOGY

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Email: info@mrhdesign.co.uk
Web: www.mrhdesign.co.uk

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Client
The Northern Tennis Club

Project
The Northern Tennis Club,
Palatine Road, West Oldbury

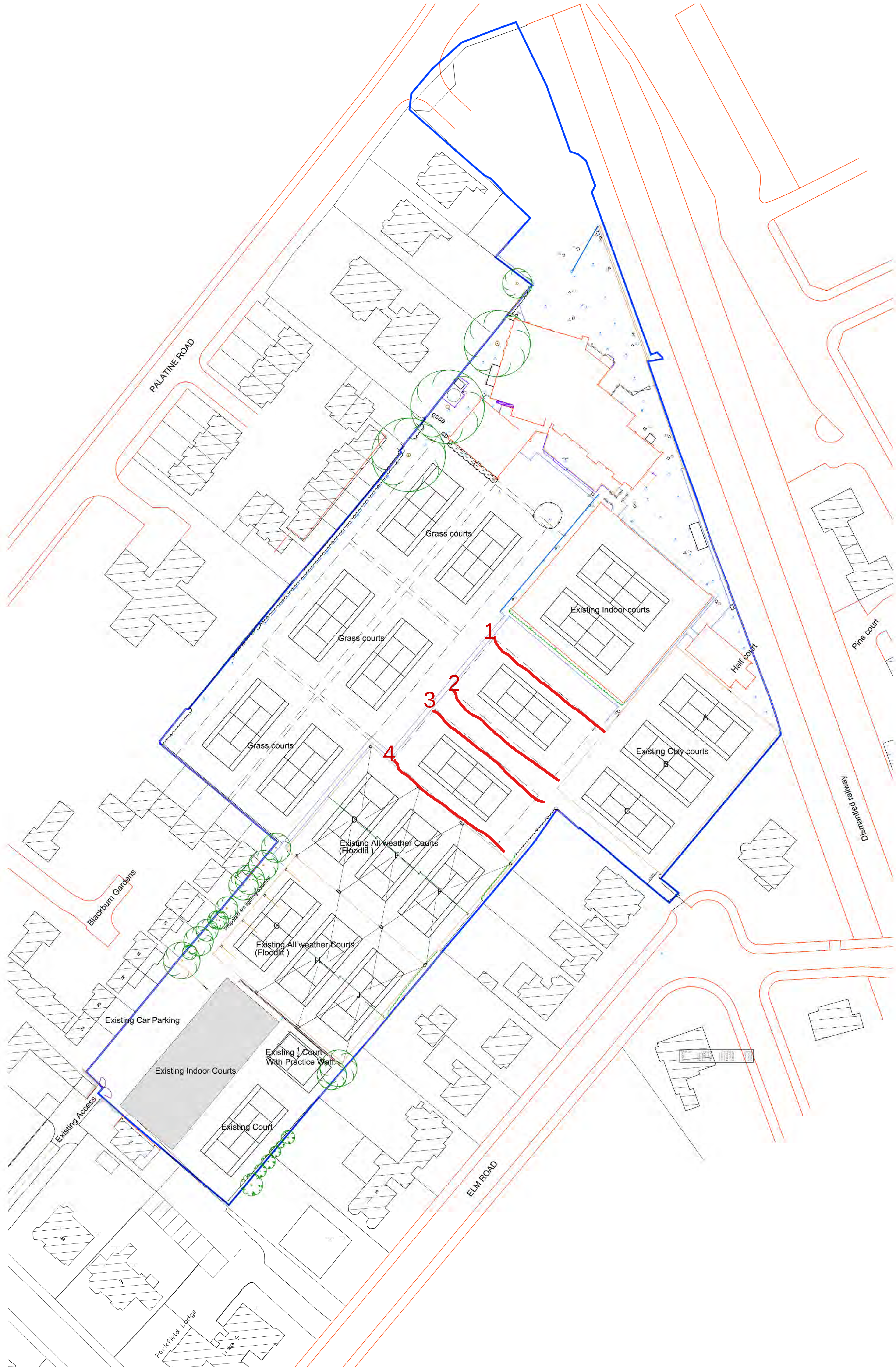
Drawings
Existing site Plan

Scale
A1
Project No: 2015-38

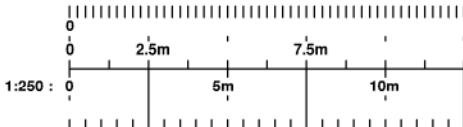
Date
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Drawing No
15-38-MRH-002

Drawn By
MRH

Rev
1



BLOCK PLAN
1:500



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Client
The Northern Tennis Club

Project
The Northern Tennis Club,
Palatine Road, West Oldbury

Drawings
Existing site plan

Scale
A1

Date
Feb 2022

Drawn By
M.R.H.

Project No.
2015-38

Drawing No.
15-38-MRH-002

The Northern LTC Padel lighting



Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Description	Tag	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
□	8	GALAXY-PT-FL-240W	Single	GALAXY-PT-FL-240W50K 0		0.900	32643	230.4	1843.2

Luminaire Location Summary							
LumNo	Label	Insertion Point	X	Y	Z	Orient	Tilt
1	GALAXY-PT-FL-240W		65.606	50.000	6.100	270	0
2	GALAXY-PT-FL-240W		53.611	50.000	6.100	270	0
3	GALAXY-PT-FL-240W		65.562	40.000	6.100	90	0
4	GALAXY-PT-FL-240W		53.596	40.000	6.100	90	0
5	GALAXY-PT-FL-240W		44.584	50.000	6.100	270	0
6	GALAXY-PT-FL-240W		32.589	50.000	6.100	270	0
7	GALAXY-PT-FL-240W		44.540	40.000	6.100	90	0
8	GALAXY-PT-FL-240W		32.574	40.000	6.100	90	0



Canopy Lighting			
#			
Revisions			

Drawn By:	
Mark Ruthers	
Date:07/09/2022	

The Northern LTC	
3 Court Canopy	

Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Description	Tag	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
☐	8	GALAXY-PT-FL-240W	Single	GALAXY-PT-FL-240W50K 0		0.900	32643	230.4	1843.2

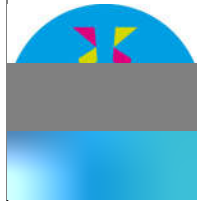
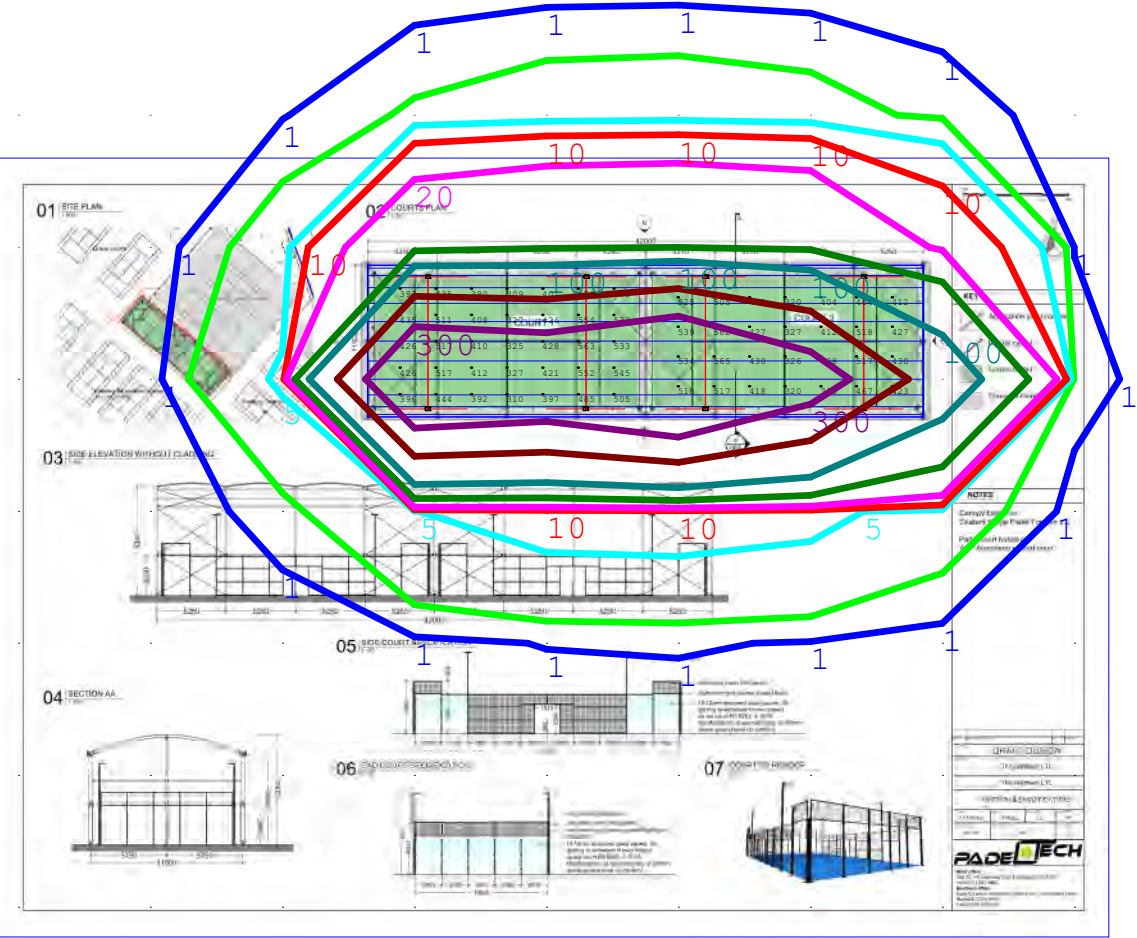
Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Min/Avg	Min/Max
CalcPts_1	Illuminance	Lux	7.17	529	0	0.00	0.00
Court 1	Illuminance	Lux	440.46	563	309	0.70	0.55
Court 2	Illuminance	Lux	447.36	565	320	0.72	0.57



Canopy Lighting			
#			
Revisions			

Drawn By:	
Mark Ruthers	
Date: 07/09/2022	

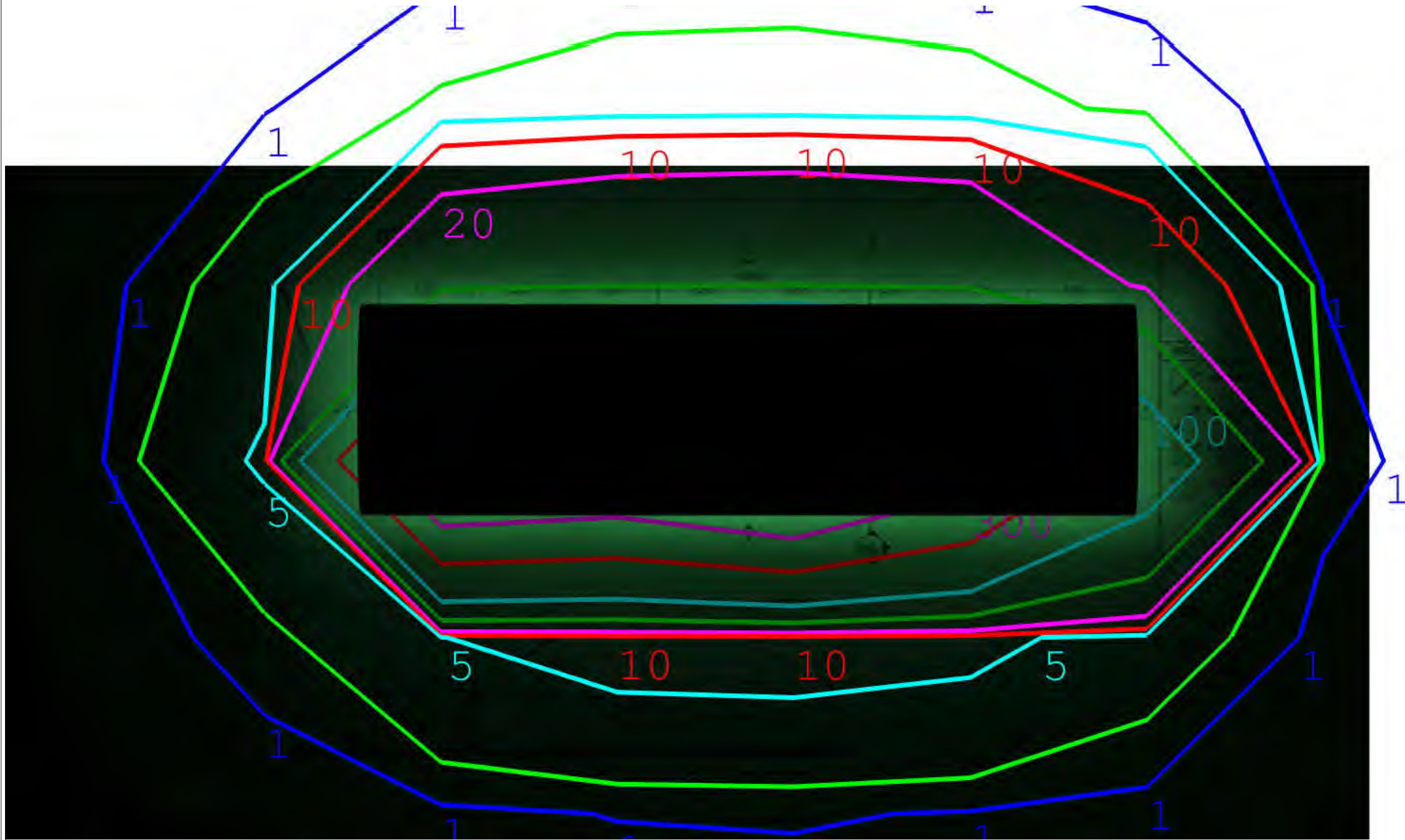
The Northern LTC
3 Court Canopy



Canopy Lighting	
#	
Revisions	

Drawn By:	
Mark Ruthers	
Date: 07/09/2022	

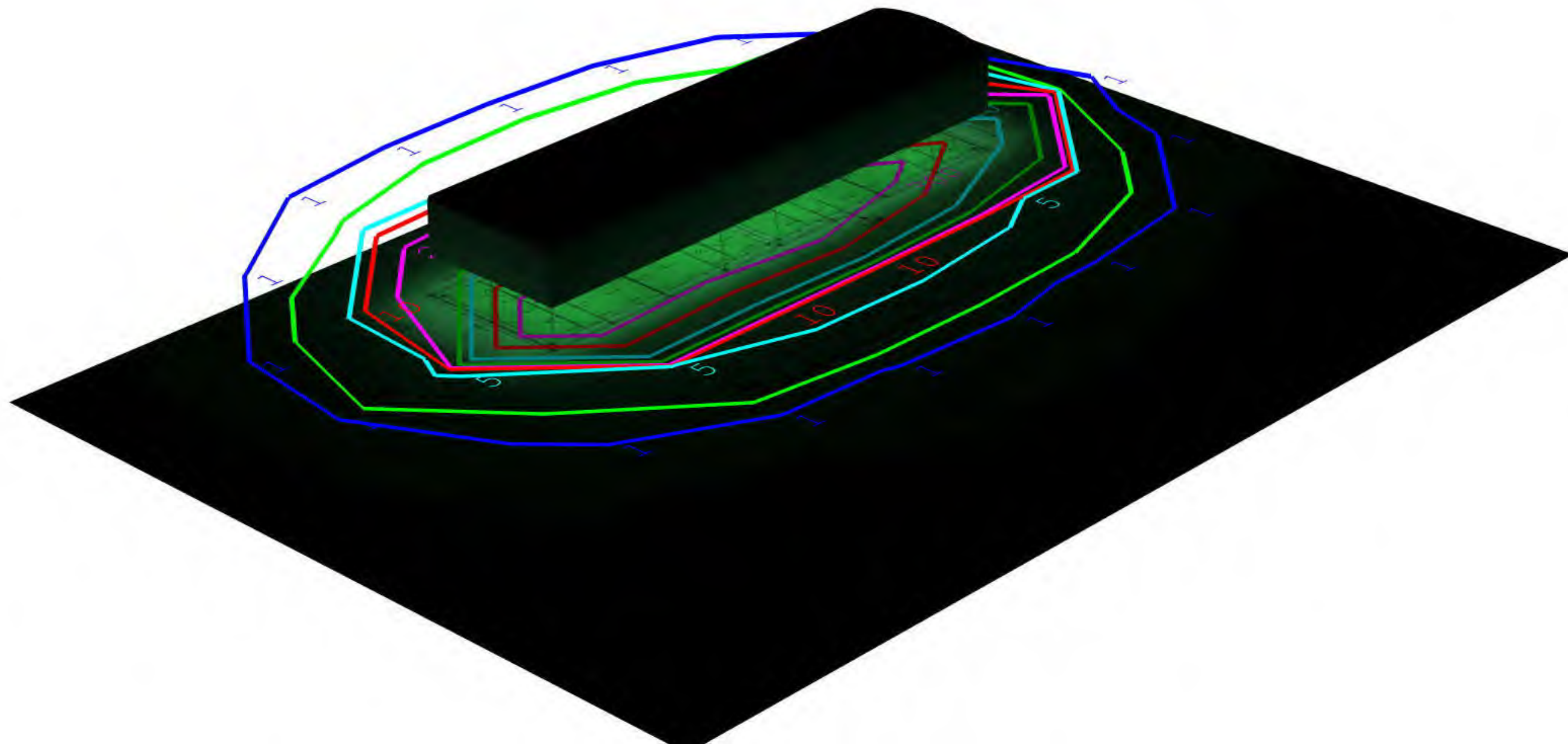
The Northern LTC 3 Court Canopy



Canopy Lighting				
#				
Revisions				
Drawn By:				
Mark Ruthers				
Date: 07/09/2022				

The Northern LTC

3 Court Canopy



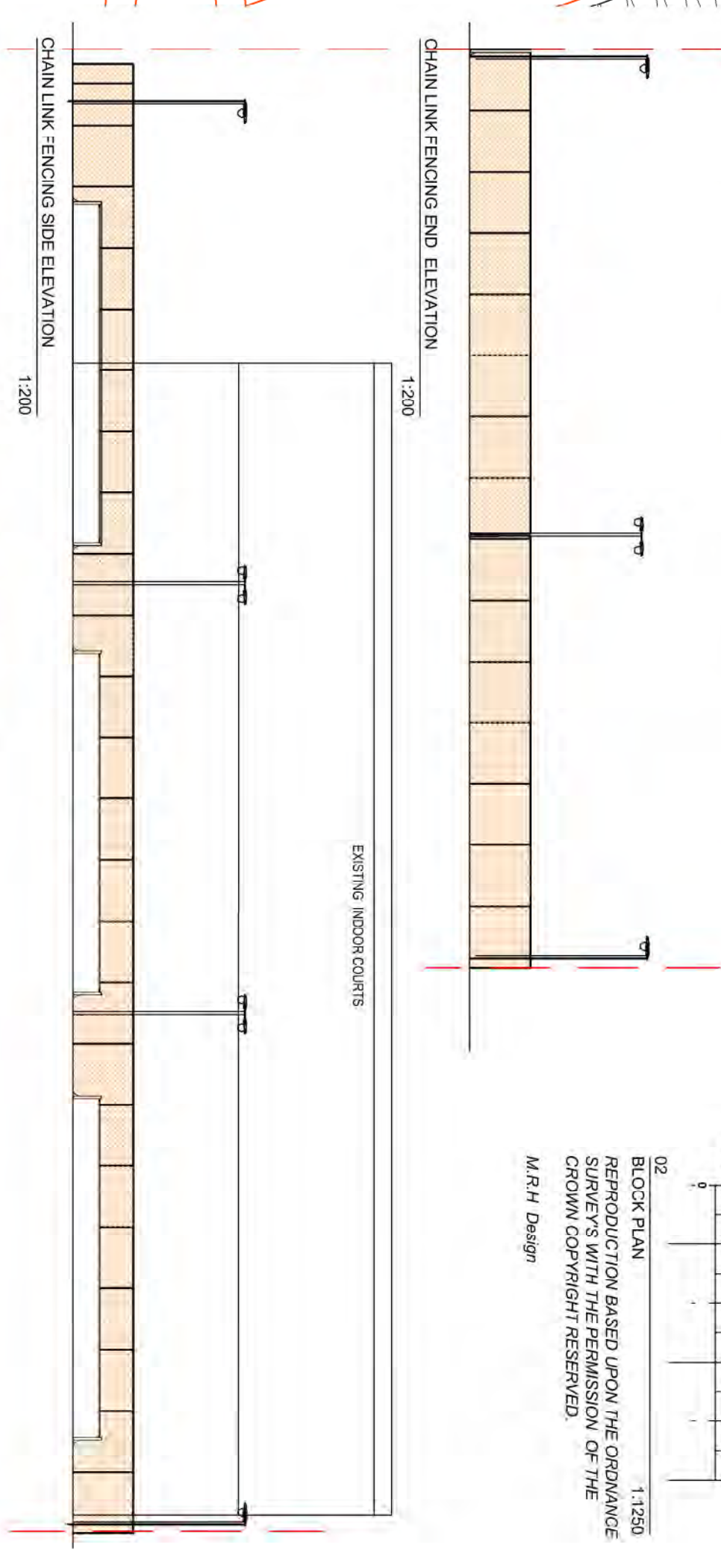
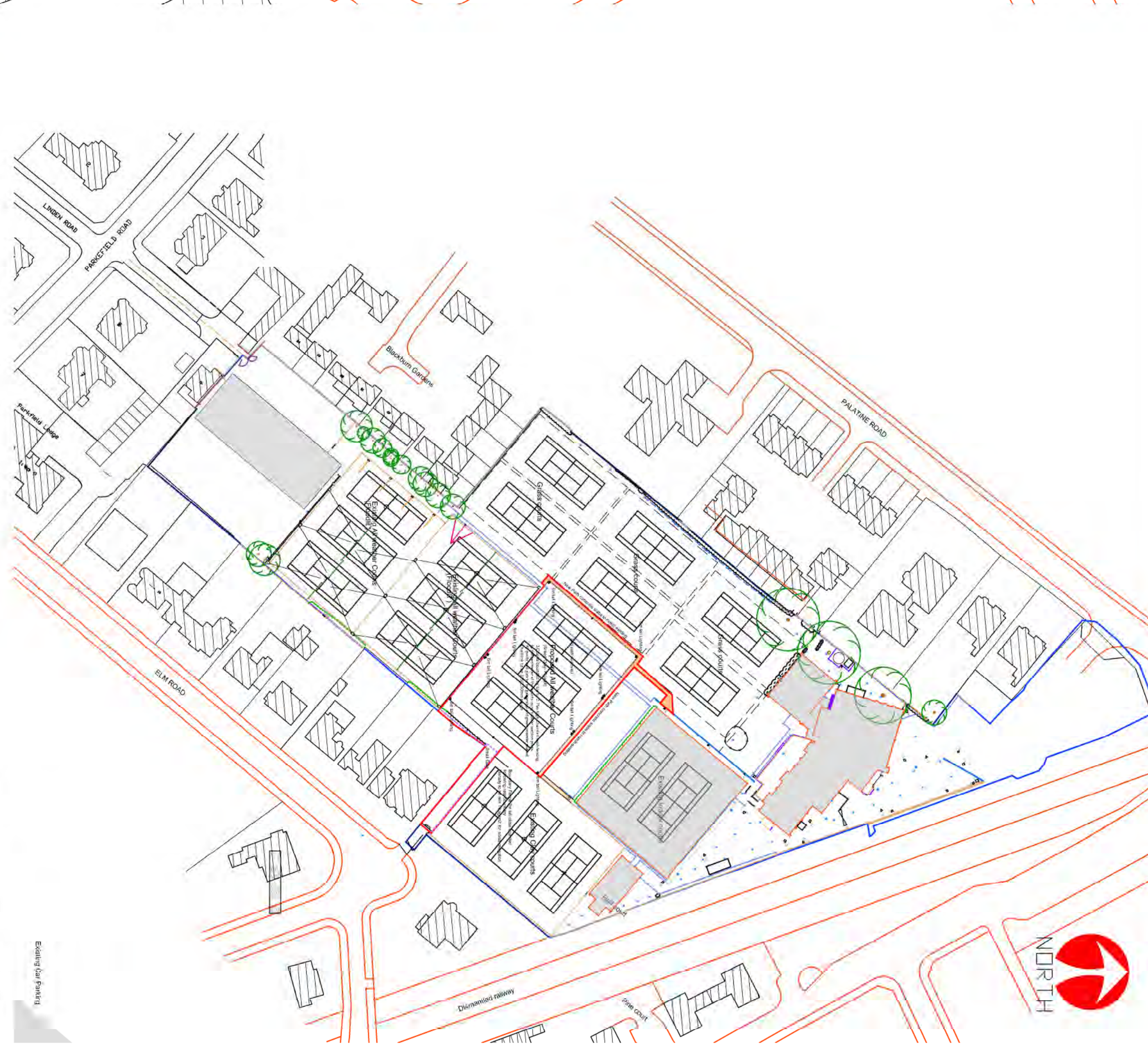
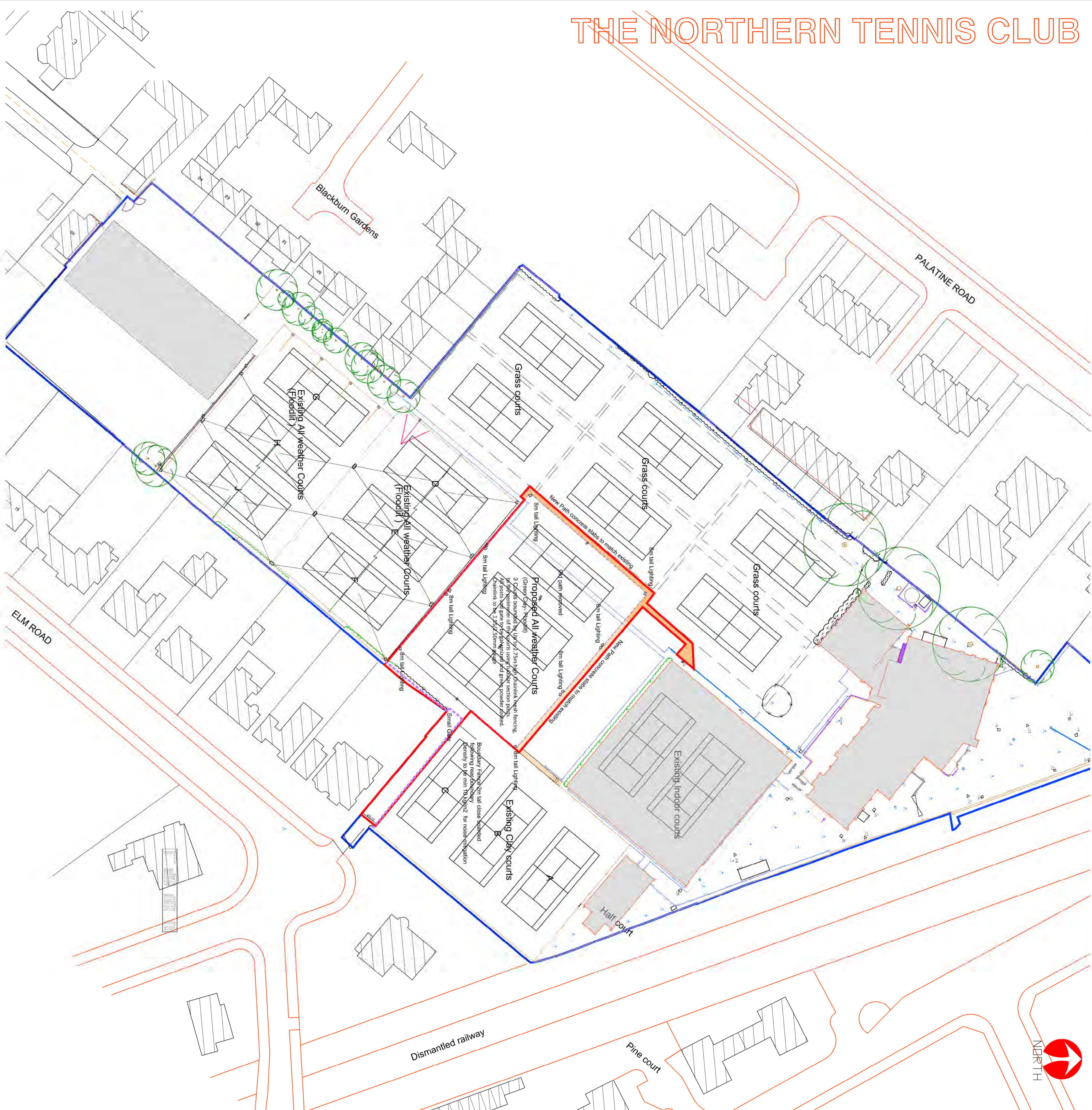
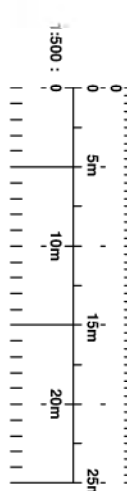
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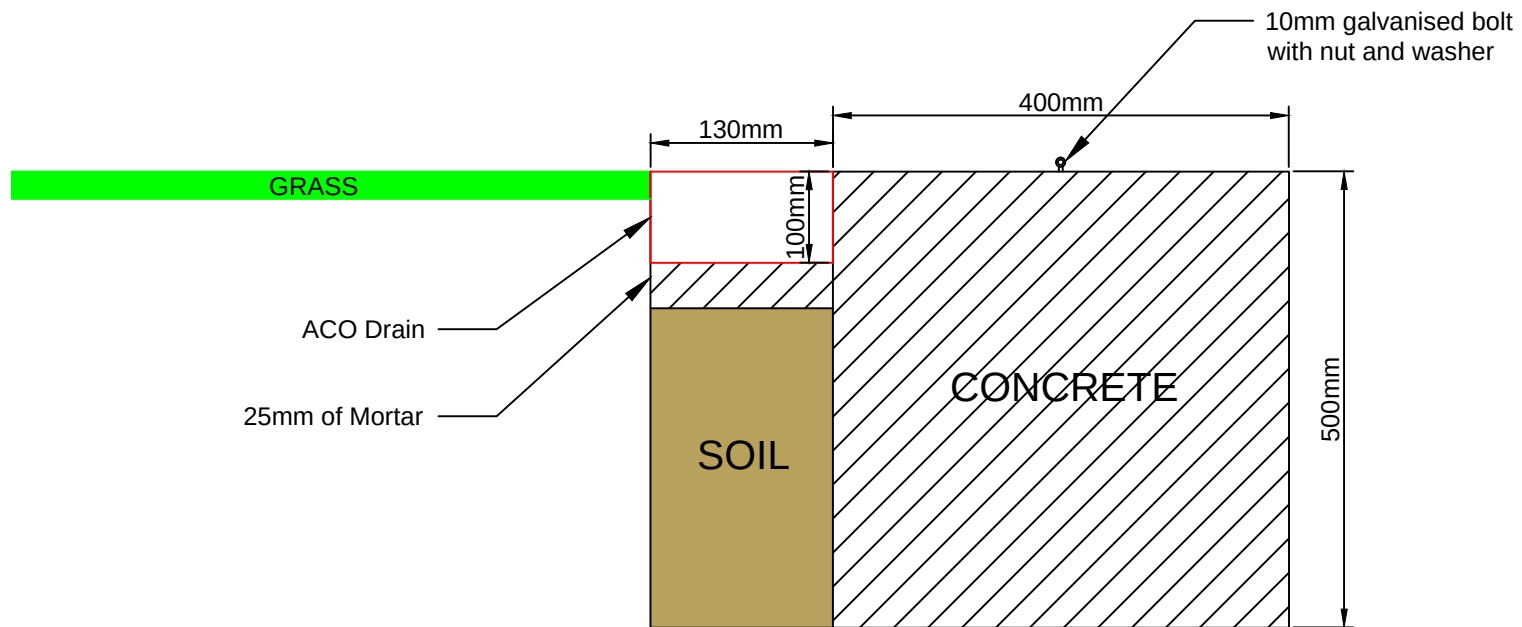
Drawn By:	
Mark Ruthers	
Date: 07/09/2022	

The Northern LTC

3 Court Canopy

THE NORTHERN TENNIS CLUB





Stuart Canvas Products

Unit 6 Hardwick Grange
Woolston
Warrington
Cheshire
WA1 4RF

TEL: (01925) 814525 www.stuartcanvas.co.uk
FAX: (01925) 831709 info@stuartcanvas.co.uk

TITLE

Wimbledon ACO Drain

SCALE

1:8

DRAWING No.

DATE

27/01/2016

ISSUE No.

001

The Northern LTC 3 Court new Layout



Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Description	Tag	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
⬢	6	GALAXY-XM-V2-450W-130X40-4000	Single			1.000	65060	455.918	2735.508
⬢	12	ATLAS-XT-600W-P50D	Single			1.000	90031	599.53	7194.36

Luminaire Location Summary								
LumNo	Label	Insertion Point	X	Y	Z	Orient	Tilt	
1	ATLAS-XT-600W-P50D		502.5	492.5	8	88.091	0	
2	ATLAS-XT-600W-P50D		489.283	501.133	8	16.436	0	
3	ATLAS-XT-600W-P50D		488.394	501.97	8	65.033	0	
4	ATLAS-XT-600W-P50D		478.195	510.588	8	23.443	0	
5	ATLAS-XT-600W-P50D		477.431	510.916	8	70.582	0	
6	ATLAS-XT-600W-P50D		465.432	521.443	8	21.235	0	
7	ATLAS-XT-600W-P50D		489.104	549.151	8	256.952	0	
8	ATLAS-XT-600W-P50D		501.431	538.896	8	209.205	0	
9	ATLAS-XT-600W-P50D		502.14	538.406	8	254.813	0	
10	ATLAS-XT-600W-P50D		512.722	529.297	8	207.233	0	
11	ATLAS-XT-600W-P50D		513.486	528.642	8	253.357	0	
12	ATLAS-XT-600W-P50D		526.086	517.788	8	205.124	0	
13	GALAXY-XM-V2-450W-130X40-4000		476.894	535.146	8	318.809	0	
14	GALAXY-XM-V2-450W-130X40-4000		489.876	523.91	8	139.325	0	
15	GALAXY-XM-V2-450W-130X40-4000		490.421	523.746	8	318.977	0	
16	GALAXY-XM-V2-450W-130X40-4000		501.603	514.31	8	141.334	0	
17	GALAXY-XM-V2-450W-130X40-4000		502.094	513.874	8	318.651	0	
18	GALAXY-XM-V2-450W-130X40-4000		514.585	503.729	8	142.833	0	



#			
Revisions			

Drawn By:	
Mark Ruthers	
Date: 02/08/2022	

The Northern LTC	
3 Court new	

Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Description	Tag	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
⬢	6	GALAXY-XM-V2-450W-130X40-4000	Single			1.000	65060	455.918	2735.508
⬢	12	ATLAS-XT-600W-P50D	Single			1.000	90031	599.53	7194.36

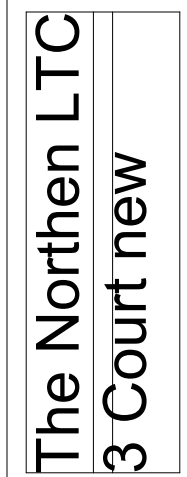
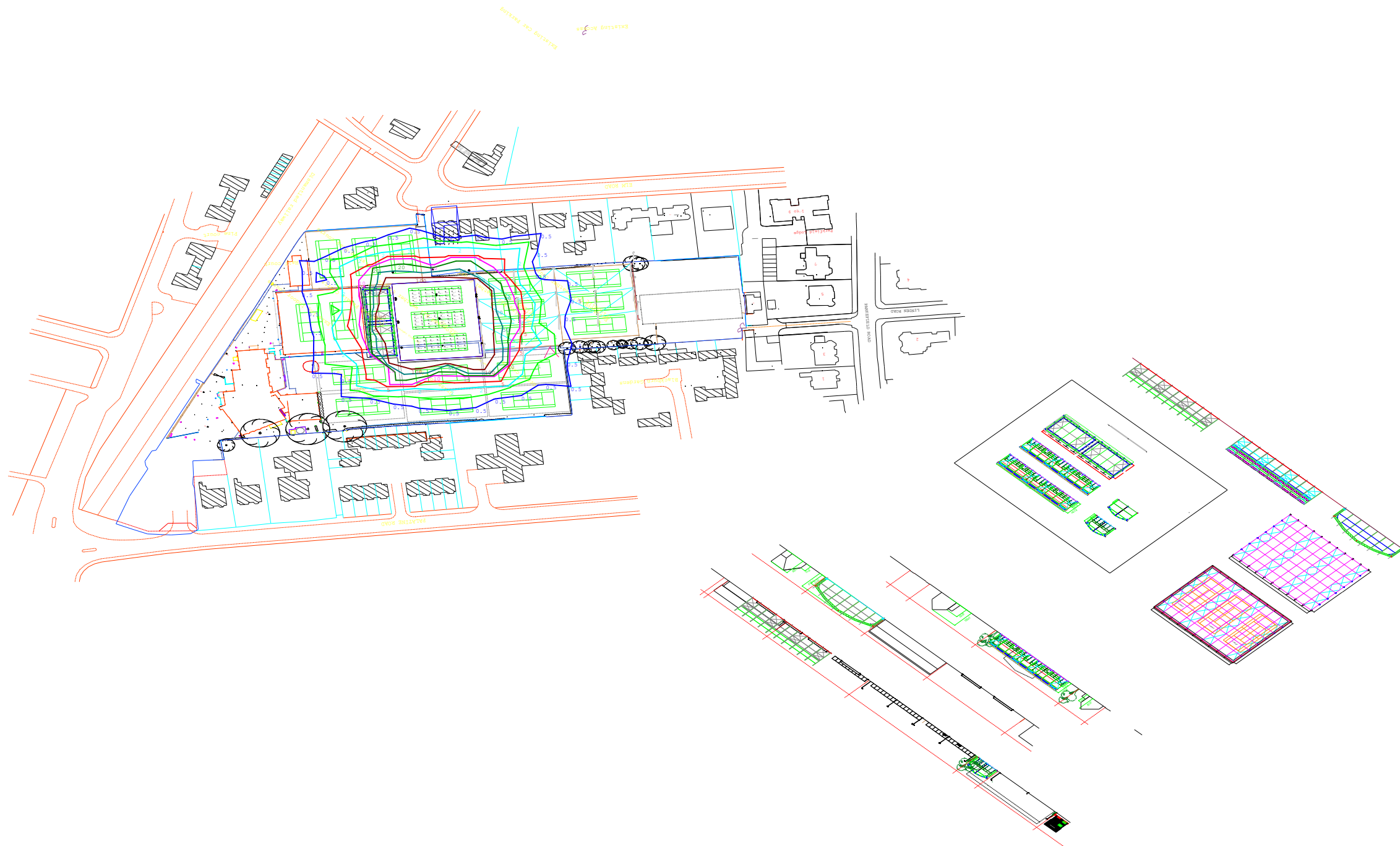
Calculation Summary							
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CalcPts_1	Illuminance	Lux	627.46	928.0	506.1	0.81	0.55
CalcPts_2	Illuminance	Lux	732.97	963.0	536.0	0.73	0.56
CalcPts_3	Illuminance	Lux	668.58	998.5	493.0	0.74	0.49
Ground level Illumination Lux	Illuminance	Lux	9.50	1044	0.0	0.00	0.00
Vertical house	Illuminance	Lux	7.14	9.8	4.3	0.60	0.44



#	Canopy Lighting		
Revisions			

Drawn By:	
Mark Ruthers	
Date:02/08/2022	

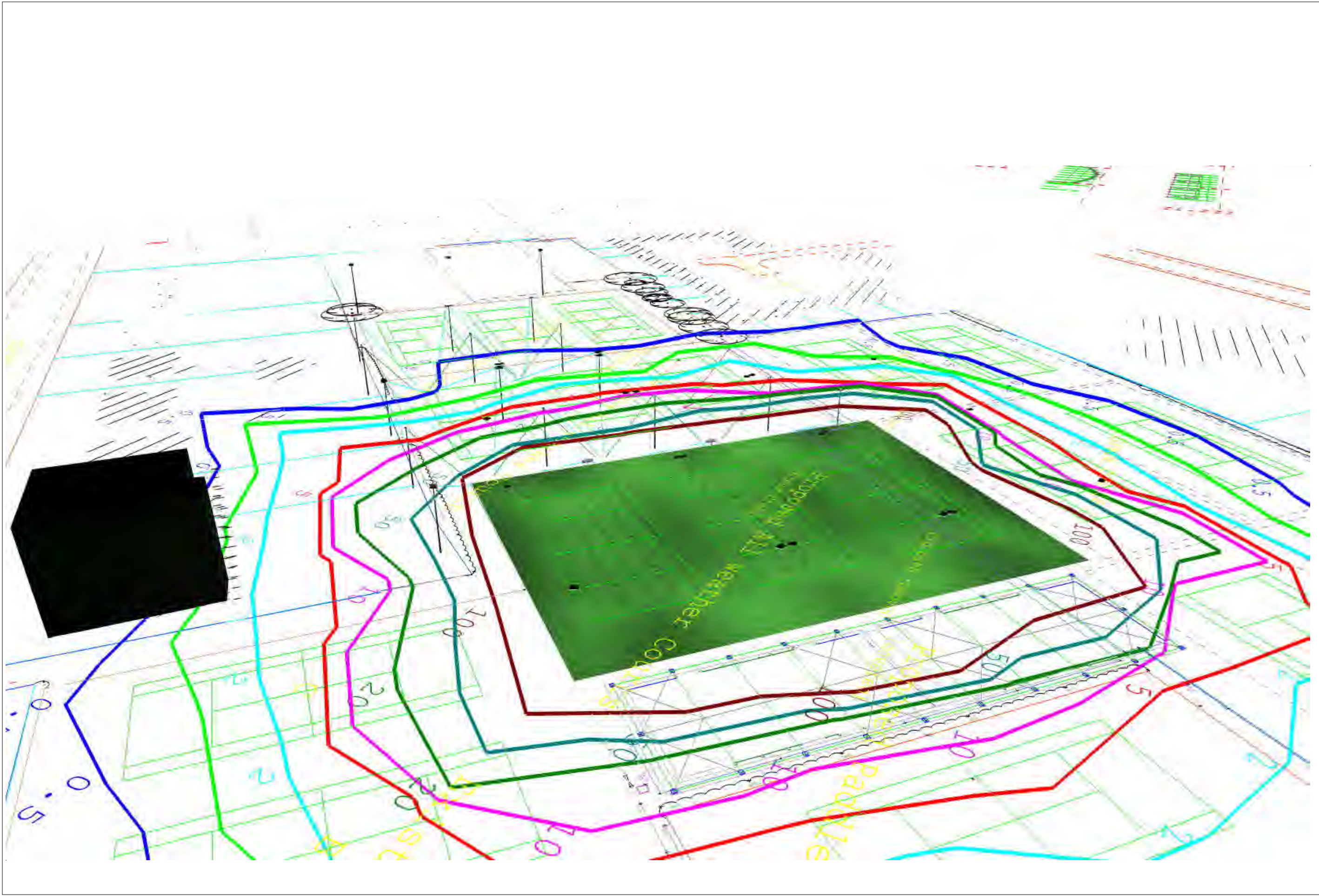
The Northern LTC	
3 Court new	



Mark Ruthers
Date:02/08/2022

#

Revisions



Canopy Lighting	
#	
Revisions	

Drawn By:	
Mark Ruthers	
Date: 02/08/2022	

The Northern LTC	
3 Court new	

Notification of construction project

Created Date: 09/06/2023

About the location of the site

Address of the construction site	NORTHERN LAWN TENNIS CLUB, THE NORTHERN , PALATINE ROAD, WEST DIDSBURY, ENGLAND, M20 3YA
In which local authority is the site address?	Manchester City Council

About the project

Description of project	Groundworks: Groundworks - Other
Description of the construction work	Removal of existing tennis courts and construction of new outdoor tennis courts, including associated external works, lighting and drainage and the construction of Padel courts including lighting, canopy structure and rainwater goods.
No of people on site	8
No of contractors on site	3
Start Date	19/06/2023
Time Allowed by Client (in weeks)	25
Duration (in weeks)	16

About those involved in the project

Name	Northern Lawn Tennis Club (John Egan)	Role	Client
Email	JEgan@laingorourke.com	Tel. Number	07770 276201
Address	THE NORTHERN, PALATINE ROAD, WEST DIDSBURY, MANCHESTER, ENGLAND, M20 3YA		

Name	WT Partnership (Jason Gould)	Role	Principal Designer
Email	jason.gould@wtpartnership.com	Tel. Number	0786 739 6213
Address	WT PARTNERSHIP , 5TH FLOOR CHANCERY PLACE, 50 BROWN STREET, MANCHESTER, ENGLAND, M2 2JT		

Name	Platt Construction Ltd (Chris Platt)	Role	Principal Contractor
Email	sales@plattconstruction.co.uk	Tel. Number	07740 736 935
Address	PLATT CONSTRUCTION LTD , MCLINTOCKS HILLIARDS COURT, CHESTER BUSINESS PARK , CHESTER, ENGLAND, CH4 9QP		

Name	Padel Tech Ltd (Andy Ponton)	Role	Contractor
Email	andy@padeltech.co.uk	Tel. Number	07472 715 791
Address	PADEL TECH LTD , 4-6 LOCHSIDE WAY , EDINBURGH, SCOTLAND, EH12 9DT		

Declaration details

Name	Jason Gould
Declaration	I have been asked by the client to notify on their behalf, and they have confirmed they are aware of their duties
Date	09/06/2023
Confirmation Email	jason.gould@wtpartnership.com

Client Signature (Can be used for your own records, ONLY if required)

Declaration (as stated above)

Name:

Declaration Signature:

Date:



Padel Tech Ltd
4-6 Lochside Way
Edinburgh
EH12 9DT

Telephone: 01315818683

Example - Tender Installation of Pressurised Truss Canopy PT05/2023

Site address: 4-6 Lochside Way, Edinburgh, EH12 9DT

Project reference:

Client reference:

Client name:

Client telephone number:

Location of works: Padel Tech Ltd (EH12 9DT)

Document created: 31/05/23

Document created by: Erica Macleod

Document approved:

Document approved by:

Client address:

Start date: 01/06/23

End date: 31/05/24

Principal contractor:

Principal designer:

Site supervisor:

Site supervisor phone:

1. Description of work

Install Canopy as per Sequence of Events - Risk assessments TBD - a selection attached.

2. Sequence of events

2.1 PT2023 - Site Arrival and Induction

Site Arrival & Induction

Description

- Sign in with the client and gain authorisation to begin work.
- Confirm that there is no asbestos in the areas to be worked on.
- Attend site induction - if no information is forthcoming ask for details of:

Evacuation Procedure

Fire Alarm Testing Times.

First Aid Procedure.

Site Welfare.

Working Area Safety

- Ask the client to perform any isolations which may be required.
- Cordon off the immediate area with cones and signage.
- Bring necessary tools onto site as required.

Site Departure

- Tidy work area ensuring that all tools are returned to the works van.
- Remove any cordons, signs and cones which have been put in place.
- Inform the client that works have been completed and ensure that the worksheet is signed off.
- Sign out of the clients premises.

2.2 Unload and set down Canopy

1. Unload lorry with telehandler and lay to designated area within the carpark as per drawing.
2. Once lorry has left the site, transport canopy to compound over the trackway that has been laid by the main contractor, this will take around 10 journeys from the car park to compound.
3. Once the canopy is now in the compound the barriers will be removed from the lower carpark.

2.3 Installation of Pressurised Truss Canopy

Installation of Base Plate

Mark out base plates on to ring beam as per drawing using measuring tape and chalk line.

Bore holes in ring beam through the allocated holes in the base plate using Hilti drill with hoover connected to a 110v supply.

Use chemical fixing and install 18mm threaded rod supplied by Okatent into hole, once set lock down using 24mm nut and washer. Tools required battery impact drill and 24mm socket.

This procedure will be replicated on each base plate.

Construction of arches.

Lay 4 parts of the arch in close proximity to each other where they will be connected.

Insert the first part of the arch into the leg with the telehandler and secure to each other using M16 and M12. Tools required to fix leg and arch together is 24mm spanner and battery impact drill with 24mm socket and 19mm spanner with battery impact drill with 19mm socket.

Repeat this process until the arch is complete.

Erection of Arch

Install the base of each leg onto the base plate and secure using M20 bolt that is inserted through the base plate and the arch leg. Secure using battery impact drill with 30mm socket and 30mm spanner.

Locate telehandler 4m behind base plates in the centre of the arch.

Attach 2 lifting straps to the arch approximately 3m either side of the centre of the arch. Attach the straps to the lifting point of the telehandler. Slowly raise the telehandler until the arch is vertical, then secure with wires to hold in position. Repeat process on second arch until vertical, then using cherry pickers (MEWPS) connect the arches together using the cross member tying them together with M12 bolts, tools

required are battery impact drill with 19mm socket and 19mm spanner. Install wires that are attached by hand with shackles. The structure is now self-supporting, all plant can be removed. Repeat this process until all arches are in place.

Installation of Roof Fabric

Using both cherry pickers (MEWPS) feed the fabric into the channels on the roof section, attach the pulling bars with wheels to the fabric then attach ropes to the pulling bars. The ropes are attached to the telehandler at the opposite side of the cherry pickers. The telehandler will boom out and slowly pull the fabric through the roof section. Repeat this process until all roof sections are in place. Use 42mm tensioning bolts to hold roof fabric in position, 42mm spanner required.

Installation of Side Fabric

Using both cherry pickers (MEWPS) feed the fabric into the channels at the top of the legs, attach ropes to the pulling points on the fabric and slowly pull down while inserting the fabric at the top. Insert the stretch bar at the bottom of the fabric and locate into the allocated bracket on the arch leg. Using M12 bolt and nut stretch the fabric to remove any creases, tools require are 2 x 19mm spanners. Repeat this process on all side / gable curtains.

3. Plant & equipment

Item	Used for	Special requirements
Hilti Drill	Drilling	HAVS Risk Assessment
17m Telehandler	Unloading articulated lorry, transporting canopy/courts to site and erection of canopy	Once unloaded from articulated lorry when travelling to site compound a banksman will accompany the telehandler at all times for protection of public and listed building.
MEWP Cherry Picker	Working at height	Harness required
Battery Operated Power Tools	fixing mesh panels to posts	
Hilti Hoover	Dust extraction	

4. Safety precautions

4.1 Personal protective equipment (PPE)



General Gloves EN420



General Personal Eye Protection EN166



General Protective Clothing EN 340



Hearing protectors - Active noise reduction ear muffs EN 352-5



Industrial Safety Helmet EN397



Personal fall protection equipment - sit harnesses EN 813



Safety footwear for Professional Use EN ISO 20345 (Class 1 SB, S1, S2, S3)

4.2 Safety responsibilities

Name	Responsibility
Andy Park	First Aid Supervision,Site Management

4.3 Safety procedures

5. Further information

5.1 Related risk assessments

5.2 Facilities affected by works

5.3 Foreseeable adverse affects and controls

Weather, Wind conditions

5.4 Monitoring systems

6. Supporting documentation

[Okatent Truss Canopy.pdf](#)

17/03/23 -3346193 kb



Risk assessment name	Tender Example Cutting Ground Bolts PT2023	Assessment type	 General
Assessor name	Erica Macleod	Affected site(s)	Padel Tech Ltd (EH12 9DT) 10 Bank Street, London
Assessment date	31/05/23	Review period	Annually
Approved by		Review date	31/05/24
Approved date		Reference	PAD1839072

Workspace(s)	Description
 Outside Area  Storage	Cut protruding ground bolts with battery grinder, ensure all handles and guards installed and in good condition, full PPE to be worn impact resistant eyewear and anti-cut gloves to be worn.

Overall risk rating : 2 (Low)

Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
 Fire Risk of injury caused by naked flames, faulty electrical equipment, arson, explosion or chemicals.	All staff How Many? all staff How? Fire evacuation protocols would be initiated	 Fire Extinguishers Provided In Areas of High Risk Fire extinguishers provided In areas of higher risk due to the work activity - Hot Works Permit to be obtained from Main contractor prior to commencing work.  No Smoking In The Area No smoking area due to hazards and risks within. Enforced with signage, disciplinary procedures etc.	1 x 2 2 Low
 Hand Tools Risk of injury whilst using hand tools	Operators Anyone in immediate vicinity How Many? any in immediate vicinity How? flying particles	 Eye Protection Worn Eye protection supplied to BS EN 166 & relevant to the work activity hazard  Only Competent Persons Can Operate The Equipment Only personnel with sufficient information, instruction and training can operate the equipment.  PPE Issued, Worn & Kept In Good Condition PPE Issued, Worn & Kept In Good Condition  Routine Maintenance Undertaken Routine maintenance is undertaken in accordance with the manufacturer's requirements  Tools cleaned, checked & stored after use Hand tools are cleaned down after use, checked and stored correctly.  Hand Tools Carried Correctly Hand tools are carried in a shoulder bag or holster attached to a belt to stop them falling.  Power Tools Carried Safely Power tools are carried about the workplace in their respective tool cases to prevent damage/falling  Pre-start Checks Undertaken Pre-start Checks Undertaken  Sharps Handled With Care (Tools) Open-bladed knives & other sharp tools are to be carried and used so as not to cause injury.  Tools Kept In Good Condition Regular checks on tools to ensure that they are in good order, in good repair & not modified	1 x 2 2 Low

Further control measures

None required

Assessor's signature: Erica Macleod

Approved by signature:



Risk assessment name	Tender Example Installation of Glass Using Manual Glass Machine PT2023	Assessment type	 General
Assessor name	Erica Macleod	Affected site(s)	Padel Tech Ltd (EH12 9DT) 10 Bank Street, London
Assessment date	31/05/23	Review period	Annually
Approved by		Review date	31/05/24
Approved date		Reference	PAD1839134

Workspace(s)	Description
 Storage	Installation of glass panels into padel courts, all panels are approx 3m x 2m

Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
 Adverse Weather. Lighting strikes, high winds/heavy rain, snow and ice. Exposure to cold can impair ability to operate tools, more likely to drop items including tools and glass.	Operators How? Exposure, hypothermia, lacerations, bruising.	 Ladders are not used in extreme weather conditions Ladders are not used in extreme weather conditions due to the risk posed by winds, lightning etc.  Work Is Postponed In Adverse Weather Conditions Work shall be postponed if weather conditions endanger health or safety	 Weather Conditions Checked & Planned For Weather conditions are considered, planned for and suitable clothing and equipment are provided. 1 x 7  7 Low

Hazard	Who could be harmed and how?	Existing controls		Risk rating (L x S)
 Manual handling. Tall, awkward & unwieldy loads that are difficult to lift, transport and handle.	Operators How? Potential for musculoskeletal and other types of injury from manual handling activities .	 Avoid Any Unnecessary Manual Handling Unnecessary manual handling activities are avoided by the use of lifting equipment.  Manual Handling - Team Lifting Team lifting will be applied as required  Manual Handling Training Individuals have received information, instruction, supervision and training in manual handling techniques	 Good Manual Handling Techniques/Postures Used All staff are provided training on safe lifting techniques and recommended postures  Manual Handling Risk Assessment Carried Out An assessment of the manual handling risk has been carried out for the task.  Mechanical Lifting Aids Provided Mechanical lifting aids are provided & used for the task	1 x 7 7 Low
 Poor Housekeeping. Area/activity may be subject to poor housekeeping, increasing risk of other hazards occurring (i.e. slips, trips and falls)	Operators How? Injuries from slips and falls- soft tissue injury, lacerations, fractures bruising.	 All Staff Trained In Good Housekeeping Techniques All staff are trained in good housekeeping techniques & the standards expected in the workplace  Regular Housekeeping Inspections Are Carried Out Regular housekeeping inspections are carried out in the workplace.	 Good Housekeeping Observed During The Task Good housekeeping standards observed & maintained by operatives throughout the duration of the task	1 x 5 5 Low

Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
 Sharp objects. Inappropriate use and storage of implements could cause injuries such as cuts to hands and fingers.	Operatives and members of the public How? Lacerations to hands and other parts of the body	 Appropriate First Aid Provided Casualties treated by first aider until emergency help arrives  First Aid Needs Assessment Carried Out Appropriate first aid facilities & personnel provided as a result of a First Aid Needs Assessment.  Mechanical Lifting Aids Provided Mechanical lifting aids are provided & used for the task. Vacuum lifter used for lifting and handling sheets of glass. These will be thoroughly examined at the required intervals  Employees are trained in glazing Only experienced and competent glazers will be employed.  Housekeeping procedures in place Regular housekeeping checks are carried out Breakages will be cleared up immediately.  Suitable gloves are provided and worn BS EN374 Standard Ensure cut resistant gloves and arm protection are used when handling and cutting glass.	1 x 6  6 Low

Hazard	Who could be harmed and how?	Existing controls		Risk rating (L x S)
 Use of Electrical Hand Tools Risk of injury due to faulty electrical equipment or contact with live electrical components.	Operators How? Potential for serious / fatal injuries from electrocution	 110 Volt or Battery Electric Tools/Equipment Used 110 Volt or Battery Electric Tools/Equipment Used  Damaged/Defective Equipment Is Removed From Use Any damaged / defective equipment is removed from use immediately  Operators Trained In Safe Operation Of Equipment Operators receive adequate information, instruction & training for safely operating the equipment  Visual Pre-use Electrical Safety Check Undertaken Visual pre-use checks of electrical equipment to detect any damage that could endanger the operator	 110 Volt or Battery Electric Tools/Equipment Used 110 Volt or Battery Electric Tools/Equipment Used To Reduce The Risk of Electrocution  Electrical Safety Check (PAT) Undertaken Electrical safety check undertaken for portable appliances  The Use Of Trailing Cables Is Avoided/Minimised The Use Of Trailing Cables Is Avoided/Minimised	1 x 6  6 Low

Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
 Work At Height Risk of falls whilst working at height	All staff, Contractors, Members of the public How? Potential for serious / fatal injuries as a result of falling from height	 Edge Protection/Identification For Work At Height Work always takes place within the confines of the guardrails, toe-boards & highlighted edges.  Inspection Of Access Equipment For Work At Height All access equipment used for working at height is inspected prior to use by a competent person  Safe System Of Work In Place For Work At Height Operatives work to the Safe System Of Work in place for the work at height  Unnecessary Work at Height Avoided Working at height is avoided where a safer alternative method is available  Employee Medically Fit To Work At Height Employees have been medically passed fit (at the required intervals) to work at height  Only Authorised Employees Work At Height Only persons that have received adequate training are authorised to work at height  Suitable Access Equipment Used Access equipment that is safe and suitable to the task is used	1 x 9  Low

Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
 Work At Height (Risk of Falling Objects) Risk of injury to those below due to falling objects whilst working at height	All staff, Contractors, Members of the public How? Potential for serious injury / fatality as a result of being struck by falling objects	 Area Kept Clear During The Process Area demarcated & kept clear during the process to reduce the risk of injury to persons close by  Falling Objects Controls/Mitigation In Place Controls for falling objects are in place such as debris netting, brick guards, crash decks etc.  Hand Tools Carried Correctly Hand tools are carried in a shoulder bag or holster attached to a belt to stop them falling.  Warning & Information Signage Displayed Relevant warning & information signage displayed relative to the work activity, hazard & risks  Barriers In Place To Prevent Unauthorised Access Fencing / Barriers in place to prevent unauthorised access to the work area  Guardrail Including Toe boards in Place Toe boards are in place to prevent objects, including tools falling from access equipment and striking people on the ground  Head Protection Worn - EN 397 Helmet/Hard Hat Head Protection Worn - EN 397 Helmet/Hard Hat to protect against the risk of falling objects.	1 x 9  9 Low

Further control measures

None required

Operating procedures

Using the glass machine to lift the sections into place.

Supporting evidence[Glass Machine Usage.docx](#)

15/11/21 -715614 kb

Assessor's signature: Erica Macleod

Approved by signature:



Risk assessment name	Tender Example Use of Glue/Hardener for carpet installation	Assessment type	 Control of substances hazardous to health
Assessor name	Erica Macleod	Affected site(s)	Padel Tech Ltd (EH12 9DT) 1066 DLL Shawfair, Old Dalkeith Road, Edinburgh
Assessment date	31/05/23	Review period	Annually
Approved by		Review date	31/05/24
Approved date		Reference	PAD1839141

Workspace(s)	Description
 Outside Area  Storage	Risk Assessment for using glue

Substance name	Reference no
Material-Safety-Multipurpose-Ultrafix-Flexibond-Adhesive-v6	n/a

Overall risk rating : 2 (**Low**)

Hazard	Who could be harmed and how?	Existing controls
 Irritating to Eyes Substances that have the ability to cause irritation/sensitisation to the eyes.	Operators How Many? 1 How? Irritation caused by splashing	 Avoid Skin & Eye Contact Whilst Handling Avoid contact with skin & eyes whilst handling the substance/chemical Wear protective eyewear and gloves during use

Routes of exposure	
	No Workplace Exposure Limits For This Substance There are no Workplace Exposure Limits (WELs) assigned for this substance.

Further controls - Fire and First Aid			
	First Aid Measures - Eye Contact <<enter specific first aid measures from the Manufacturer's Safety Data Sheets>>		First Aid Measures - Skin Contact <<enter specific first aid measures from the Manufacturer's Safety Data Sheets>>

Further control measures

None required

Assessor's signature: Erica Macleod

Approved by signature:



Risk assessment name	Tender Example Concrete Operations (Drilling, Hilti etc.)_PT2023	Assessment type	 General
Assessor name	Erica Macleod	Affected site(s)	Padel Tech Ltd (EH12 9DT)
Assessment date	31/05/23	Review period	Annually
Approved by		Review date	30/05/24
Approved date		Reference	PAD1839097

Workspace(s)	Description
 Outside Area  Storage	Risk Assessment for carrying out concrete drilling.

Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
 Adverse Weather Cold and wet working conditions	All staff, Operators How? hypothermia, heat stroke	 Weather Conditions Checked & Planned For Weather conditions are considered, planned for and suitable clothing and equipment are provided.  Work Is Postponed In Adverse Weather Conditions Work shall be postponed if weather conditions endanger health or safety	1 x 6  6 Low

Hazard	Who could be harmed and how?	Existing controls		Risk rating (L x S)
 Brick/Concrete/Silica Dust (RCS) Risk of ill health due to harmful Silica dust created through cutting/coring through brick/stone	All staff How? Risk of ill health due to harmful Silica dust created through cutting/coring through brick/stone	 Barrier Cream/Hygiene Station Provided Suitable barrier cream & hygiene station is provided  Eye Wash Station Provided Eye wash station provided for first aid treatment for debris/dust etc. in eyes.  Health Surveillance Programme In Place Health surveillance programme is in place relevant to the hazards in the workplace  Hygiene Procedures in Place & Followed Hygiene procedures in place & followed  Provision Of Written Safe Systems of Work In Place Provisions of written Safe Systems of Work to control the process with the minimum risk of injury  RPE - Disposable Respirator FFP 3 Protects against fine dust, mists & fumes (FFP1 - APF of 4; FFP2 - APF of 10 & FFP3 - APF of 20)  Shadow Vacuuming Used To Reduce Harmful Dust Shadow vacuuming techniques used whilst using power tools to minimise harmful dusts in the workplace	 Eye Protection Worn Eye protection supplied to BS EN 166 & relevant to the work activity hazard  Good Hand Washing/Hygiene Procedures Observed Good hand washing procedures observed to reduce the risk of skin disorders and promote good hygiene  Health Surveillance/Screening Records Kept Records of all health surveillance/screening programmes are kept  Protective Clothing Must Be Worn Protective Clothing Must Be Worn  Respirable Crystalline Silica Dust Controlled Respirable Crystalline Silica dust is adequately controlled during working activity to CIS 36  RPE Is Face-Fit Tested RPE, used to protect workers from identifiable diseases, is "face-fit" tested by a competent person.  Shadow Vacuuming/On-Tool Extraction To Reduce Dust Shadow vacuuming/on-tool extraction employed whilst using power tools to minimise harmful dusts	1 x 2 2 Low

Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
 Hand Arm Vibration Dosage Level > 2.5m/s² Excessive exposure to vibrating tools may cause health issues such as Hand Arm Vibration Syndrome	All staff How? Excessive exposure to vibrating tools may cause health issues such as Hand Arm Vibration Syndrome	 Hand Arm Vibration Control Max 3 hours Per Day Hand Arm Vibration is controlled through the measurement of the vibration dosage & time permitted  Job Rotation In The Event Of High Vibration Dosage Formal procedure implemented to enforce team work to ensure vibration dosage is not exceeded.  Selection & Use of Low Vibration Equipment Company policy is to select & procure low vibration dosage tools & equipment  Tools With Excessive Hand Arm Vibration Not Used Operatives are not to use vibrating tools unless the vibration dosage/time to meet the ELV is known.  Hand Arm Vibration Training Given Information, instruction and training is given to employees using vibrating tools in the workplace.  Regular Breaks Taken Regular Breaks Taken  Self-Check For Hand Arm Vibration Syndrome Operatives self-check for Hand Arm Vibration Syndrome and report accordingly	1 x 7 7 Low
 Noise levels at/above 85 dB(A) Risk of hearing damage due to exposure to excessive levels of noise.	All staff How? Risk of hearing damage due to exposure to excessive levels of noise.	 Hearing protection provided & worn Hearing protection available and to be worn whilst carrying out noisy work activities  Noise Risk Assessment Carried Out Noise risk assessment carried out c/w regular measurements to ensure it is kept valid and up to date  Mandatory Hearing Protection Zones Designated Mandatory hearing protection zones designated as noise levels are 85dB(A) and above in the area.  Protective Screens Provided & Used Protective Screens Provided & Used	1 x 8 8 Low

Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
 People Movement (Risk of Slips, Trips & Falls) Risk of injury due to a variety of access/egress hazards that can cause slips, trips & falls	All staff How? Risk of injury due to a variety of access/egress hazards that can cause slips, trips & falls	 Aisles & Gangways Kept Clear For Good Housekeeping All aisles and gangways kept clear to avoid slips and trips  Good Housekeeping Observed During The Task Good housekeeping standards observed & maintained by operatives throughout the duration of the task  Spillage Procedure In Place Spillage procedure in place  Suitable & Sufficient Lighting Provided Suitable & sufficient lighting provided for the workplace activities  All Staff Trained In Good Housekeeping Techniques All staff are trained in good housekeeping techniques & the standards expected in the workplace  Regular Housekeeping Inspections Are Carried Out Regular housekeeping inspections are carried out in the workplace.  Spillages Cleaned Up Immediately Spillages Cleaned Up Immediately	1 x 7 7 Low
 Work Equipment (Power Tools - Electrical) Risk of injury by using electrically powered work equipment	All staff How? Risk of injury by using electrically powered work equipment	 110 volt Electric Tools/Equipment Used 110 volt Electric Tools/Equipment Used  Only Competent Persons Can Operate The Equipment Only personnel with sufficient information, instruction and training can operate the equipment.  Power Tools Checked Before Use Regular checks on power tools to ensure that they are in good order and in good repair  Instruction Manual Has Been Read & Understood Users of the equipment work to the safe operating instructions in place for the equipment  Power Tools Carried Safely Power tools are carried about the workplace in their respective tool cases to prevent damage/falling  Provisions of Written Method Statements Provisions of Written Method Statements	1 x 7 7 Low

Further control measures

None required

Assessor's signature: Erica Macleod

Approved by signature:



Risk assessment name	Tender Example General Manual Handling (TILE)_PT2023	Assessment type	 General
Assessor name	Erica Macleod	Affected site(s)	Padel Tech Ltd (EH12 9DT)
Assessment date	31/05/23	Review period	Annually
Approved by		Review date	30/05/24
Approved date		Reference	PAD1839044

Workspace(s)	Description
 Outside Area  Storage	General risk assessment regarding manual handling

Hazard	Who could be harmed and how?	Existing controls		Risk rating (L x S)
 General Manual Handling Activities Risk of injury whilst undertaking general manual handling activities.	All staff How Many? All Staff How? Risk of injury whilst undertaking general manual handling activities.	 Aisles & Gangways Kept Clear For Good Housekeeping All aisles and gangways kept clear to avoid slips and trips  Manual Handling Procedures In Place Relevant employees have been given training in safe lifting practices commensurate with the tasks.  Protective Footwear Worn Whilst Manual Handling Suitable protective footwear is worn whilst carrying out manual handling activity.  Task Specific Manual Handling Training Given All relevant employees have received training on correct manual handling techniques on the specific task	 Gloves Worn - EN 388 Mechanical Risks (Abrasion) Gloves Worn - EN 388 Mechanical Risks (Abrasion Resistant)  Manual Handling Risk Assessment Carried Out An assessment of the manual handling risk has been carried out for the task  Suitable & Sufficient Lighting Provided Suitable & sufficient lighting provided for the workplace activities	1 x 7 7 Low

Further control measures

None required

Operating procedures

This is a general manual handling assessment with suggested control measures for relevant manual handling tasks.

Assessor's signature: Erica Macleod

Approved by signature:

Tender Example General Manual Handling (TILE)_PT2023



Risk assessment name	Tender Example Hand Held Power Tools - Vibration Assessment PT2023	Assessment type	 General
Assessor name	Erica Macleod	Affected site(s)	Padel Tech Ltd (EH12 9DT) 10 Bank Street, London
Assessment date	31/05/23	Review period	Annually
Approved by		Review date	31/05/24
Approved date		Reference	PAD1839049

Workspace(s)	Description
 Outside Area  Processing  Storage	All hand held power tools to be covered by this.

Hazard	Who could be harmed and how?	Existing controls		Risk rating (L x S)
 Hand Arm Vibration at Excessive exposure to vibrating tools may cause health issues such as Hand Arm Vibration Syndrome	Operators How Many? 2-3 How? This would not be relevant to the tool we are using on this job	 Hand Arm Vibration Control Hand Arm Vibration is controlled through the measurement of the vibration dosage & time permitted  Health Surveillance/Screening Records Kept Records of all health surveillance/screening programmes are kept  Selection & Use of Low Vibration Equipment Company policy is to select & procure low vibration dosage tools & equipment  Tools With Excessive Hand Arm Vibration Not Used Operatives are not to use vibrating tools unless the vibration dosage/time to meet the ELV is known.	 Hand Arm Vibration Training Given Information, instruction and training is given to employees using vibrating tools in the workplace.  Job Rotation In The Event Of High Vibration Dosage Formal procedure implemented to enforce team work to ensure vibration dosage is not exceeded.  Self-Check For Hand Arm Vibration Syndrome Operatives self-check for Hand Arm Vibration Syndrome and report accordingly	2 x 7  14 Medium

Further control measures

None required

Operating procedures

Use of exposure ready reckoner tool: to identify exposure:
<http://www.hse.gov.uk/vibration/hav/readyreckoner.htm>

Supporting evidence	
hav calculator .xls 25/04/21 -91648 kb	source-vibration-magnitude-app3 (1).pdf 25/04/21 -47788 kb

Assessor's signature: Erica Macleod

Approved by signature:



Padel Tech Ltd
4-6 Lochside Way
Edinburgh
EH12 9DT

Telephone: 01315818683

Tender Example Install Posted Courts & Synthetic Turf

Site address: 4-6 Lochside Way, Edinburgh, EH12 9DT

Project reference:

Client reference:

Client name:

Client telephone number:

Location of works: Padel Tech Ltd (EH12 9DT)

Document created: 31/05/23

Document created by: Erica Macleod

Document approved:

Document approved by:

Client address:

Start date: 31/05/23

End date: 31/05/24

Principal contractor:

Principal designer:

Site supervisor:

Site supervisor phone:

1. Description of work

Install of Courts & Synthetic Turf

2. Sequence of events

2.1 Install Posted Courts, XXXXXXXX

Installation of Posted Padel Court

1. Mark out Internal area of padel court using measuring tape and chalk line.
2. Install corner post using Hilti Drill and Hoover with 16mm masonry drill bit, secure post to ground with M16 ground anchors and battery impact drill with 22mm socket, plumb post using plastic packers supplied.
3. From side of the corner post using the spacer bar following the chalk line install the next post 4m Post, using Hilti Drill and Hoover with 16mm masonry drill bit, secure post to ground with M16 ground anchors and battery impact drill with 22mm socket, plumb post using plastic packers supplied.
4. From side of the 4m post using the spacer bar following the chalk line install the next post. 6m light post, using Hilti Drill and Hoover with 16mm masonry drill bit, secure post to ground with M16 ground anchors and battery impact drill with 22mm socket, plumb post using plastic packers supplied.
5. From side of the 6m light post using the spacer bar following the chalk line install the next post 3m Post, using Hilti Drill and Hoover with 16mm masonry drill bit, secure post to ground with M16 ground anchors and battery impact drill with 22mm socket, plumb post using plastic packers supplied.
6. From side of the 3m light post using the spacer bar following the chalk line install the next post 3m Post, using Hilti Drill and Hoover with 16mm masonry drill bit, secure post to ground with M16 ground anchors and battery impact drill with 22mm socket, plumb post using plastic packers supplied. Repeat this process until all posts are installed round the court.
7. Install mesh panels from light post to 3m post, then 3m post to next 3m post. Install gate mesh panel to the next 3m post, Install next panel to light post. The panels will be secured in place with 10mm tech screws using a battery impact drill. Repeat this process on the opposite side.
8. Install 1m high mesh panels above the glass using the 3m tower scaffold, tech screws and a battery impact drill. Repeat this process until complete.
9. Neoprene all 4m posts ready for glass installation. Using glass machine remove 1 pane of glass from the stillage and offer it up to

the first bay between the 4m posts.

10. Sit the glass onto timber wedges and secure in place with glass brackets supplied with the padel court. Use glass bolts with the plastic washers and 13mm nut supplied with the padel court. Tools required Glass machine, 8mm hex key and 13mm spanner. Repeat this process until all the glass is installed.
11. Install net posts , using Hilti Drill and Hoover with 16mm masonry drill bit, secure post to ground with M16 ground anchors and battery impact drill with 22mm socket, plumb post using plastic packers supplied.

Repeat for each court as/if required

2.2 Installation of Carpet XXXXX

Roll out No1 carpet at the end of the court, Install the carpet with the 3m base in in the correct position 3m from the glass to the rear of the base line. Cut 1 stitch from the end that will join with carpet No2.

Tools required are a carpet knife.

Roll out carpet No2 and lie next to carpet No1, remove a stitch along both 10m edges and fit up to carpet No1. Tools required are a carpet knife.

Roll out carpet No3. Remove the white line on the edge of the carpet that will be used for the centre line.

Remove 1 stitch from the opposite side and fit up to carpet No2. Tools required are a carpet knife.

Roll out carpet No4 and lie next to carpet No3, remove a stitch along both 10m edges and fit up to carpet No3. Tools required are a carpet knife.

Roll out No5 carpet at the end of the court, Install the carpet with the 3m base line in the correct position 3m from the glass to the rear of the base line. Fit the carpet to No4. Tools required are a carpet knife.

Open up a tub of glue and mix the glue and hardener using a drill with a mixing paddle. Open the carpets ready for the glue joint, Install the glued tape below the joint in the carpet and knit together to hide the joint. Tools required are a drill with a paddle attachment.

Use this process to glue all carpets together, Once the glue has set cut the centre line using the line cutter and glue the line into place. Tool required is a line cutter.

Install approximately 2 tonne of sand using brushes. Repeat for as many courts as installing.

3. Plant & equipment

Item	Used for	Special requirements
Battery Operated Hand Tools	Drilling	
Hilti Drill	Drilling	HAVS Risk Assessment
Hand Drill	Drilling holes for bolt down fixings	
Carpet Knife	Cutting carpet	
Glass Machine	Installing glass panels to court structure	
Ladders	Installation of top glass securing bolt and also securing top of mesh panel with a tech screw.	3 points of contact at all times on the ladder
Battery Operated Power Tools	fixing mesh panels to posts	
Generator 110V	Generating electricity for all hand tools	

Item	Used for	Special requirements
Hilti Hoover	Dust extraction	



Glass Machine
(2).jpg
Glass Machine



Glass Machine
(1).jpg
Glass Machine

4. Safety precautions

4.1 Personal protective equipment (PPE)



General Gloves EN420



General Personal Eye
Protection EN166



General Protective
Clothing EN 340



Hearing protectors -
Active noise reduction
ear muffs EN 352-5



Industrial Safety Helmet
EN397



Safety footwear for
Professional Use EN
ISO 20345 (Class 1 SB,
S1, S2, S3)

4.2 Safety responsibilities

Name	Responsibility
------	----------------

Andy Park	First Aid Supervision,Storage,Site Management,Risk Assessments
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4.3 Safety procedures

4.3.1 Site Inductions

All operators and sub-contractors working on this project will undergo a Site Induction before commencing the work. This will be undertaken by **Padel Tech Ltd** Contracts Manager at suitable times and will include the hazards that will be expected to be encountered whilst on site, the precautions and control measures that have been agreed to be put into place, reviewing this Construction Phase Plan and any completed Method Statements.

During the induction, the actions to be taken when encountering an unplanned hazard will also be briefed.

4.3.2 Emergency Procedure

Should an incident take place, the supervisor will inform contact the emergency services on "999" tand give the location and details of what has taken place.

First aid will be given and the casualty made warm and comfortable until emergency services arrive.

The nearest hospital is located:

ADD HOSPITAL HERE

4.3.3 Site Access & Egress

The principal contractor is responsible for providing safe access and egress to the site.

Site manager will ensure safe access and egress is maintained for themselves and other contractors in the area they are working in.

Good standards of housekeeping will be maintained. Site manager will be responsible for safe access and egress when you are the principal contractor.

Access routes will be sign posted and barriers will be put in place where necessary.

Where practical, pedestrians and vehicles will be segregated.

5. Further information

5.1 Related risk assessments

PAD1762010 Hand Held Power Tools - Vibration Assessment PT2023

PAD1762016 Installation of Glass Using Manual Glass Machine PT2023

PT2023 Cutting Ground Bolts PT2023

Concrete Operations (Drilling, Hilti etc.)_PT2023

Use of Glue/Hardener for carpet installation

General Manual Handling (TILE)_PT2023

5.2 Facilities affected by works

n/a

5.3 Foreseeable adverse affects and controls

n/a

5.4 Monitoring systems

6. Supporting documentation



Risk assessment name	Tender Example Use of telehandlers for lifting operations, loading and unloading	Assessment type	 General
Assessor name	Erica Macleod	Affected site(s)	Padel Tech Ltd (EH12 9DT)
Assessment date	31/05/23	Review period	Annually
Approved by		Review date	30/05/24
Approved date		Reference	PAD1839093

Workspace(s)	Description
 Outside Area  Storage	This Risk Assessment is an example only and must be reviewed/amended to suit your own business practices and working environment.

Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
 Entanglement/contact with moving parts. Becoming entangled in moving parts of Telehandler (forks, fork attachments, wheels etc)	Operators Others around the work area How? Risk of crush injuries, amputation and possible fatality from becoming entangled in the moving parts of the telehandler	 Avoid Loose Clothing Do not wear loose fitting clothing as they can catch on control levers.  Clearly defined work area by the use of barriers Cordon of work area as necessary to prevent unauthorised access to pedestrians and others in work area	2 x 4  Medium

Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
 Equipment control and operation Unexpected movement of plant and unauthorised use	Operators Others in the work area How? Risk of impact injuries, crush injuries and potential fatality	 Lower attachments and apply hand brake Never leave the telehandler without first lowering the bucket or attachment to the ground and applying the hand brake  Remove the ignition key Remove the ignition key and lock all doors when leaving the telehandler unattended.  Telehandler to be parked on firm level ground Operator to check to ensure telehandler is parked on firm level ground at all times  The engine is witched off when unattended Never leave the Telehandler unattended with engine running.  Trained and competent operators Operators are trained, competent and authorised to operate the specific telehandler used	2 x 4  8 Medium

Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
 Fire or high temperature When refuelling, sparks, flames, leaks, hot engine can ignite fuel. Coming in contact with hot parts.	Operators How? Risk of burn injuries, explosions leading to property damage and possible fatality	 Avoid contact with engine/exhaust outlet Keep clear of engine and exhaust outlet and avoid contact with hot components. Allow engine to cool before attempting any maintenance  Mobile phones are to be turned off during refuelling Operator to ensure mobile phone is turned off and that there are no naked flames in the area  Observe warning label on engine Operator to adhere to warning label on engine and keep flammables away from the engine  Refuel or charge battery in well ventilated area free of sparks or naked flames Refuel in a well ventilated area.  Engine to be switched off during refuelling Operator is responsible to shut engine down prior to refuelling  No smoking policy enforced + signage Smoking is prohibited in company vehicles and during fuelling.  PPE provided Wear protective clothing during operation.  Visual inspection for leaks carried out Carry out visual checks for fuel leaks. Report any defects causing the leak and repair to be carried out before operation.	2 x 4  Medium

Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
 Lifting jib attachments Plant tipping or rolling from telehandler becoming unstable due to the use of the wrong or unapproved lifting jibs	Operators Others around work area How? Risk of impact injuries, crush injuries, and possible fatality	 Beware of suspending loads in strong winds Care to be taken during windy conditions. All lifts to be aborted during adverse weather conditions  Never drag the load horizontally The lifting jib hook must be vertically above the load at all times.  Never exceed the rated capacity of the telehandler Operators instructed to never exceed the rated capacity of the telehandler with a lifting jib attached or extend the load beyond the limits of the loading zones  Only approved lifting jibs used Operators to only use lifting jibs approved by the manufacturer for the specific telehandler they are operating  Safe Working Load (SWL) The weight of all lifting chains, slings etc must be included as part of the load  Telehandler to be level before load is raised Ensure Telehandler is level before raising load.  Travel on slope to be avoided Do not travel across a slope with a load attached to the lifting jib.  Use of tag lines to steady suspended loads Tag lines to be used to steady suspended load, ensuring that it is long enough to keep the person holding the tag line clear of the telehandler and the load	2 x 5  10 High
 Slips, trips and fall Slipping on handrails, steps or floor due to wet, slippery or defective handrails, steps	Operators How? Slips, trips and falls resulting in bruising, cut injuries, sprains, fractures etc	 Cab access Suitable footwear is being worn - steel mid sole boots or similar Safe working procedure to be followed: Always use the grab handles on the cab Maintain 3 points of contact Always climb out of the cab backwards, facing the cab Never jump down Step on every rung of the steps Where required, utilise a footstool/step to aid access Note - report any defective or damaged steps immediately to your line manager  Good Housekeeping Observed Keep handrails, steps and floor clean and clear of oil, grease, mud, rubbish and tools	2 x 4  8 Medium

Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
 Ultra violet radiation Exposure to ultra violet radiation if working outside	Operators How? Prolonged exposure to UV radiation may result in acute and chronic health effects on the skin, eye and immune system.	 Appropriate PPE provided Wear sunscreen, hat, long sleeves and long pants. Shorts and short sleeve clothing is not permitted.	2 x 4  8 Medium

Further control measures

None required

Assessor's signature: Erica Macleod

Approved by signature: